PROCEEDINGS

OF THE

MADRAS GOVERNMENT

IN THE

PUBLIC WORKS DEPARTMENT,

IRRIGATION BRANCH,

FOR THE

MONTH OF OCTOBER 1890.

Printed by Authority.

MADRAS:
PRINTED BY THE SUPERINTENDENT, GOVERNMENT PRESS.

1890.

INDEX

TO THE

TABLE OF CONTENTS AND TABULAR STATEMENT OF MISCELLANEOUS PROCEEDINGS AND MATTERS OF ROUTINE,

IRRIGATION,

FOR THE MONTH OF OCTOBER 1890.

	—	Page.
A		
Allotments.—Redistribution of —, Irrigation, Periyár project ...	Regular.	1
Allotments—II Circle	Regular.	2
Allotments—IV Circle	Regular.	2
Administration Report of Irrigation works in Bengal for 1889-90 ...	Routine.	2
Administration Report of Irrigation works in Bombay for 1889-90 ...	Routine.	2
B		
Buckingham canal.—Upkeep of the floating plant —	Regular.	...
Barur Tank Project.—Constructing masonry falls on distributaries —.	Regular.	3
Bank canal.—Raising the right bank of the — above Mortala Lake.	Regular.	3
Boats.—Construction of four Pulicat — for the subordinates of the Kurnool-Cuddapah canal	Regular.	3
Boat.—Sale of staff — No. 1, Buckingham canal division	Regular.	3
Barur Tank Project.—Cutting new head to Agaram channel of the —	Regular.	4
Budget Estimates.—Under 43, Irrigation and Navigation, for 1891-92	Routine.	1
C		
Coleroon left bank.—Raising — from Coleroon bridge to Mudiyar anicut	Regular.	1

	—	Page.
Compensation for land, Kistna district	Regular.	1
Canal.—Improving the Masulipatam —	Regular.	1
Cotton machine, Dowlaishweram Workshops.—Sale of the — ...	Regular.	3
Closure of the construction estimates of certain irrigation works ...	Regular.	3
Charges.—Old maintenance — of works for which Capital and Revenue accounts are kept	Regular.	5
D		
Dowlaishweram Workshops.—Report on the working of the — for 1889-90	Regular.	4
E		
Erratum	Regular.	1
Erratum	Routine.	2
F		
Floating plant, Buckingham canal.—Upkeep of the —	Regular.	2
Floating plant, Godávari delta.—Upkeep of the —.	Regular.	3
Flood-gate to the north bank of the Pennér river	Regular.	4
G		
General Mullins' Manual of Irrigation	Routine.	2
H		
I		
Island of Irakam, Pulicat Lake.—Embankment round the — ...	Regular.	1
Irrigation Works.—Final results of — for 1889-90	Regular.	4
Irrigation Revenue reports of the Punjab	Routine.	1
J		
K		
L		
Lands required for the Periyár project	Routine.	2

	—	Page.
Lands required for the Periyár project	Regular.	2
Lands required for the Periyár project	Regular.	2
M		
Modification of allotments—Buckingham canal division	Regular.	2
Modification of allotments—I Circle	Regular.	3
Marundai channel.—Repairs to the —	Regular.	3
Minor Irrigation Works.—Review of progress reports on —	Routine.	2
N		
Notes of Inspection of the Chief Engineer for Irrigation on the Kurnool-Cuddapah canal	Regular.	5
O		
P		
Periyár Project.—Redistribution of allotment, —	Regular.	1
Periyár Project.—Estimate for excavating the 4th reach of the north main channel	Regular.	2
Periyár Project.—Estimate for reconstructing No. II, Lock weir near Thekkady	Regular.	4
Periyár Project.—Progress report, —	Regular.	4
Photos of the Periyar Project	Routine.	1
Periyár Division.—Progress report of works in Nos. I and II, — ...	Routine.	2
Palayam channel, Tinnevelly district.—Regarding the closing of the —	Routine.	2
Pennér anicut system.—Construction, &c., of —	Regular.	3
Q		
R		
Returns of traffic in the navigable canals	Regular.	4
S		
Surplus weir across Kattur-Madugu, Chingleput district	Regular.	1
Staff Boats.—Report on the working of — Godávari	Regular.	2
Statement of objectionable items	Routine.	1
Statement of objectionable item	Routine.	1
Suit	Rontine.	2

	—	Page.
T		
Tank.—Repairing the Ráyal cheruvu old —, Anantapur district ...	Regular.	1
Tirumalai Tank, Nellore division	Regular.	3
Transfer of funds	Regular.	...
Tank.—Improving the Alapacheri —	Regular.	4
Transfer of funds	Regular.	2
Támbraparni flood banks.—Lands taken up for the — below Srívaikunthum anicut	Routine.	2
Transfer of funds, III Circle	Regular.	2
Transfer of funds	Regular.	4
Transfer of funds	Regular.	5
Transfer of funds	Regular.	5
U		
V		
W		
Water-supply for the town of Coimbatore	Routine.	1
X		
Y		
Z		

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

TABLE OF CONTENTS,

IRRIGATION,

FOR THE MONTH OF OCTOBER 1890.

1 Subjects.	2 Dates of Proceedings.	3 Date of Report to Secretary of State for India.	4 Numbers and Dates of previous Proceedings.
Redistribution of allotments, Irrigation, Periyár Project.—The proposed — for the year 1890-91, sanctioned.	1890. 6th Oct. No. 554 I.	...	......
Raising Coleroon left bank.—Revised estimate, amounting to Rs. 82,300, for — from Coleroon bridge to Nundyar anicut, sanctioned.	7th Oct. No. 557 I.	...	3rd Sept. 1887, No. 541 I. 23rd Jany. 1886, No. 72 I. 16th Oct. 1885, No. 881 I. 11th Jany. 1883, No. 20 I.
Rayalcheruvu old tank, Anantapur district.—Passing orders on petition from the ryots of Rayalcheruvu, requesting to repair the — and to restore the new tank.	7th Oct. No. 559 I.	...	......
Surplus weir across Kaltur-Madugu, Chingleput division.—Estimate of Rs. 11,000 for constructing a — to supply the Kaltur tank and partially the Thattamangi tank, sanctioned.	7th Oct. No. 560 I.	...	......
Compensation for land, Kistna district.—Revised estimate, amounting to Rs. 4,268, for — acquired in connection with the Pulligedda aqueduct, sanctioned with remarks.	7th Oct. No. 561 I.	...	25th Nov. 1884, No. 1057 I. 1st Oct. 1888, No. 577 I.
Masulipatam canal.—Revised estimate, amounting to Rs. 1,05,200, for improving and widening the —, Kistna Eastern delta, sanctioned with remarks.	7th Oct. No. 562 I.	...	24th March 1890, No. 193 I. 1st Oct. 1888, No. 577 I. 1st July 1885, No. 575 I.
Island of Irakam, Pulicat lake.—Estimate of Rs. 17,800 for embankment round the —, sanctioned with remarks.	8th Oct. No. 563 I.	...	......

1 Subjects.	2 Dates of Proceedings.	3 Date of Report to Secretary of State for India.	4 Numbers and Dates of previous Proceedings.
Erratum.—Ordered that an — be published in the *Fort St. George Gazette* converting the name of the village "Gullamangudi" to "Pullamangudi" in the schedule of land required for the Poigai channel published at page 659 of the *Gazette.*	1890. 8th Oct. No. 564 I.	...	27th Aug. 1890, No. 462 I.
Transfer of funds, South Arcot division.—Sanctioning certain —.	9th Oct. No. 568 I.	...	......
Transfer of funds, North Arcot division.—Sanctioning certain —.	9th Oct. No. 569 I.	...	17th May 1890, No. 278 I.
Transfer of funds, III Circle.—Sanctioning certain —.	10th Oct. No. 571 I.	...	......
Allotments, II Circle.—Sanctioning modifications of certain — and transferring to the Pennér anicut system Rs. 3,880, surrendered from the grant for the Sangam anicut system.	10th Oct. No. 572 I.	...	......
Allotments, IV Circle.—Orders on application for modifications of —.	10th Oct. No. 573 I.	...	......
Periyár Project—Revised estimate, amounting to Rs. 25,000, for excavating the 4th reach of the north main channel —, sanctioned.	10th Oct. No. 574 I.	...	......
Modifications of allotments, Buckingham canal division.—The — proposed by the Superintending Engineer, II Circle, sanctioned.	10th Oct. No. 575 I.	...	......
Land.—Ordered that the notification for the acquisition of — required for the 6th reach of the Periyár main channel in the Madura taluk be published in the *Fort St. George Gazette.*	14th Oct. No. 577 I.	...	......
Land.—Ordered that the notification for the acquisition of — required for the 6th reach of the Periyár main and branch channels in the Madura taluk be published in the *Fort St. George Gazette.*	14th Oct. No. 578 I.	...	......
Floating plant of the Buckingham canal.—Estimate of the cost of upkeep of the — for 1891-92, approved.	16th Oct. No. 579 I.	...	13th Dec. 1889, No. 618 I. 5th Dec. 1889, No. 606 I. 11th March 1889, No. 131 I.
Staff Boats, Godavári district.—Statements showing the working of the — for 1889-90, recorded with remarks.	16th Oct. No. 580 I.	...	5th Dec. 1889, No. 606 I. 25th June 1889, No. 303 I. 23rd Nov. 1888, No. 700 I. 26th Aug. 1878, No. 662 I.

1 Subjects.	2 Dates of Proceedings.	3 Date of Report to Secretary of State for India.	4 Numbers and Dates of previous Proceedings.
Modification of allotments.—Passing orders on application of the Superintending Engineer, I Circle, for — in the Godávari Western division.	1890. 16th Oct. No. 581 I	...	.....
Marandai channel.—The execution of the repairs to the — by the Public Works Department, sanctioned.	16th Oct. No. 582 I.	...	......
Barúr tank project.—Revised estimate, amounting to Rs. 2,690, for constructing 19 masonry falls on distributaries —, sanctioned.	16th Oct. No. 583 I.	...	1st Sept. 1885, No. 748 I.
Turumerla tank, Nellore division.—Estimate of Rs. 5,130 for improvements to —, sanctioned.	16th Oct. No. 584 I.	...	......
Raising the right bank of the Bank canal.—Estimate amounting to Rs. 10,200, for — Kistna Western delta above Mortala lock, sanctioned.	16th Oct. No. 586 I.	...	......
Pulicat boats.—Estimate of Rs. 600 for constructing four — for use of the upper subordinates of the Kurnool-Cuddapah canal, sanctioned with remarks.	16th Oct. No. 587 I.	...	......
Cotton machine at the Dowlaishweram workshops.—The proposal of the Superintending Engineer, I Circle, to write off the books the difference between the book value and the sum realised by the sale of the —, sanctioned.	16th Oct. No. 588 I.	...	17th Dec. 1889, No. 629 I. 28th Oct. 1885, No. 918 I.
Staff Boat No. 1, Buckingham canal division.—Authorizing the sale of 2nd class —.	17th Oct. No. 589 I.	...	13th Dec. 1889, No. 618 I.
Floating plant, Godávari delta.—Estimate of the cost of maintaining the — during 1891-92, approved.	17th Oct. No. 590 I.	...	4th Dec. 1889, No. 601 I. 5th Dec. 1889, No. 606 I. 14th May 1890, No. 272 I.
Modifications of allotments, I Circle.—The — proposed by the Superintending Engineer, sanctioned.	17th Oct. No. 591 I.	...	......
Closure of the construction estimates of certain Irrigation Works, Madras.—Passing orders on letter from the Government of India making certain remarks regarding the — not charged to revenue.	17th Oct. No. 592 I.	...	3rd Aug. 1889, No. 362 I. 21st Aug. 1890, Nos. 453-54 I.
Pennér anicut system.—Requesting the Government of India to reconsider the orders for treating the construction estimate of the — as closed on 30th April last, the sanctioned estimate not having yet been exceeded.	17th Oct. No. 593 I.	...	......

1 Subjects.	2 Dates of Proceedings.	3 Date of Report to Secretary of State for India.	4 Numbers and Dates of previous Proceedings.
Periyár Project.—Estimate of Rs. 4,570, for reconstructing No. II, lock weir near Thekaddy, sanctioned.	1890. 18th Oct. No. 594 I.	...	......
Returns of traffic on the navigable canals.—Ordered that the Government of India be addressed on the subject of the introduction of a uniform system of recording the — of the different provinces.	20th Oct. No. 595 I.	...	7th Nov. 1889, Nos. 543-44 I.
The Government of India addressed on the above subject.	20th Oct. No. 596 I.	...	......
Alapacheri tank, Tinnevelly division.—Estimate of Rs. 2,700 for improving the —, sanctioned.	20th Oct. No. 597 I.	...	......
Financial results of Irrigation works.—Ordered that the statements of — for the year 1889-90, be forwarded to the Government of India.	20th Oct. No. 598 I.	...	......
Forwarded	20th Oct. No. 599 I.	...	......
Transfer of funds.—Sanctioning certain — ...	20th Oct. No. 600 I.	...	......
Periyár Works.—Progress reports of works in Nos. I and II divisions for September 1890, ordered to be forwarded to the Government of India.	23rd Oct. No. 601 I.	...	1st Sept. 1890, Nos. 470-71 I. 29th Sept. 1890, Nos. 546-47 I.
Forwarded	23rd Oct. No. 602 I.	...	......
Barur tank project.—Revised estimate of Rs. 5,710 for cutting new head to Agaram channel of the —, sanctioned.	23rd Oct. No. 604 I.	...	2nd Aug. 1890, No. 418 I. 20th Nov. 1889, No. 572 I.
Flood-gate in the north bank of the Pennér river.—Authorising the Examiner, Public Works Accounts, to admit the outlay incurred in constructing the —.	24th Oct No. 605 I.	...	......
Dowlaishweram workshops.—Passing orders on report on the working of the — during the year 1889-90.	27th Oct. No. 611 I.	...	2nd Dec. 1886, No. 3174 W. 24th Sept. 1889, No. 2671 W. 28th Oct. 1889, No. 518 I. 17th July 1890, No. 1931 W.

1 Subjects.	2 Dates of Proceedings.	3 Date of Report to Secretary of State for India.	4 Numbers and Dates of previous Proceedings.
Old maintenance charges of works for which Capital and Revenue accounts are kept.—The appropriation proposed by the Chief Engineer for Irrigation to meet the difference of Rs. 169 between the fixed — and the amount provided for such charges in the current year's budget, sanctioned.	1890. 27th Oct. No. 612 I.	...	......
Notes of Inspection of the Chief Engineer for Irrigation.—Communicating to the Superintending Engineer, III Circle, with remarks, the — on the Kurnool-Cuddapah canal.	28th Oct. No. 613 I.	...	......
Transfer of funds.—Sanctioning certain — ...	28th Oct. No. 614 I.	...	......
Transfer of funds.—Sanctioning certain — ...	29th Oct. No. 618 I.	...	......

PUBLIC WORKS DEPARTMENT,

IRRIGATION BRANCH.

PROCEEDINGS OF THE MADRAS GOVERNMENT,

FOR THE MONTH OF OCTOBER 1890.

Irrigation.
Account.

READ—the following paper :—

From Major D. McNEIL CAMPBELL, R.E., Superintending Engineer, Periyár Project, to the Chief Engineer, Public Works Department, dated Periyár, 11th September 1890, No. 1546 P.R.

I have the honor to submit, for your approval and sanction, the enclosed statement of redistribution of allotments, Irrigation, for the current official year (1890-91).

Enclosure.

PERIYAR PROJECT.

Statement showing the redistribution of allotments, Irrigation, for 1890-91.

Division.	Main head.	Sub-head.	Number of item.	Name of work.	Amount of estimate.	Existing grant for 1890-91.	Modification of allotment applied for. Reduction.	Modification of allotment applied for. Increase.	Proposed grant.
				49. Irrigation.	RS.	RS.	RS.	RS.	RS.
				Capital Expenditure on Public Works (not charged against Revenue).					
No. I Periyár Division.	(1) Head Works.	C. Works	1	Main dam	6,91,000	1,50,000	..	..	1,50,000
		Do.	2	Right bank escape	1,37,000	25,000	5,000	..	20,000
		Do.	3	Watershed cutting	1,20,000	16,000	..	..	16,000
		Do.	4	Watershed tunnel	2,61,000	56,000	3,000	..	53,000
		K. Buildings	5	Buildings at Periyár and Thekady	1,47,000	7,600	..	3,000	10,600
		O. Miscellaneous	6	Roads, locks and dams in Muliyapanjan and improving course of Muliyapanjan	87,000	5,000	..	5,000	10,000
		P. Maintenance	7	Maintenance during construction	50,000	3,000	..	..	3,000
				Total, (1) Head Works ..	..	2,62,600	8,000	8,000	2,62,600
				North Main Channel.					
				I Reach.					
		D. Regulators	1	Head-sluice to Peranei anicut	30,150	8,000	..	..	8,000
		Do.	2	Scouring sluice to do.	13,400	9,000	2,445	..	6,555
		Do.	3	Head-sluice to Vadagarai channel	6,430	5,930	1,000	..	4,930
		E. Falls and weirs	4	Fall and bridge at 2½ miles in lieu of plan No. 45..	6,850	..	..	1,289	1,289
		F. Cross drainage works ..	5	Culvert at ½ mile in lieu of plan No. 52 in 1st mile	7,265	2,205	463	..	1,742
		Do. do. ..	6	Do. at 2⅓ miles in lieu of plan No. 52 ..	5,120	..	..	500	500
		Do. do. ..	7	Do. at 3 miles 1st furlong and 470 feet in lieu of culvert, plan No. 52	4,720	1,408	..	2,298	3,706
		Do. do. ..	8	Aqueduct at 2 miles 7 furlongs and 234 feet do., plan No. 53	4,140	2,900	..	..	2,900
		Do. do. ..	9	Do. at 3 miles 3 furlongs and 500 feet do. ..	4,140	3,000	918	..	2,082
		Do. do. ..	10	Surplus sluice 12 vents for Ramarajapuram tank at 3 miles 7 furlongs in lieu of surplus sluice plan No. 54	32,400	10,000	2,000	..	8,000
		Do. do. ..	11	Culvert Ramarajapuram tank	6,500	..	..	2,200	2,200
		Do. do. ..	12	Do. at 5½ miles in lieu of plan No. 52 ..	3,500	..	..	481	481
		G. Bridges	13	Bridge for South Indian Railway	14,761	7,000	..	..	7,000
		Do.	14	Bridge in the 7th mile, plan No. 69	5,167	..	..	286	286
		Do.	15	Accommodation bridge at 4th mile to replace the bridge built by ryots	3,340	1,800	..	328	2,128
		Do.	16	Constructing bridge at 1 mile 4 furlongs and 8·03 chains	3,500	..	..	3,500	3,500
		L. Earthwork	17	Excavation	1,40,665	55,000	5,960	..	49,040

No. II. Periyár Division.		O. Miscellaneous	18	Sluice to irrigate 50 acres at 5 furlongs 10 chains.	430	..	..	430	430
		Do.	19	Irrigation sluice at 2 miles 3 furlongs	800	..	..	800	800
				II Reach.					
		F. Cross drainage works ..	20	Constructing a culvert at 8th mile in lieu of culvert, plan No. 52	4,300	..	..	790	790
		Do. do. ..	21	Constructing an aqueduct of 3 vents at 10 miles in lieu of plans Nos. 57 and 58	11,900	4,500	..	..	4,500
		Do. do. ..	22	Constructing an aqueduct of 2 vents at 10 miles in lieu of inlet and outlet, plans Nos. 59 and 60 ..	18,000	9,000	1,000	..	8,000
		Do. do. ..	23	Cross drainage work No. IV at 10th mile in lieu of inlet and outlet, plans Nos. 61 and 62 ..	4,080	..	..	2,867	2,867
		L. Earthwork	24	Excavation	49,200	4,000	..	..	4,000
				III Reach.					
	(2) Main Canals and Branches.	D. Regulators	25	No. I Irrigation sluice, III reach	1,150	..	..	1,140	1,140
		Do.	26	No. II do. III do.	1,150	..	..	1,050	1,050
		Do.	27	No. III do. III do.	1,150	..	..	220	220
		F (1). Other cross drainage works.	28	Constructing an aqueduct of 3 vents at 11th mile in lieu of inlet and outlet, plans Nos. 63 and 64.	23,500	8,500	..	..	8,500
		Do. do. ..	29	Constructing a superpassage in substitution of an inlet and outlet, plans Nos. 57 and 58 in the 12th mile	14,100	6,000	..	..	6,000
		Do. do. ..	30	Constructing a superpassage in the 13th mile to take the place of inlet and outlet, plans Nos. 57 and 58	12,800	6,000	..	..	6,000
		Do. do. ..	31	Constructing a superpassage in the 14th mile in lieu of inlet and outlet, plans Nos. 57 and 58 ..	13,500	6,000	..	..	6,000
		Do. do. ..	32	Constructing an aqueduct in the 15th mile in place of inlet and outlet, plans Nos. 57 and 58 ..	10,200	6,000	..	..	6,000
		Do. do. ..	33	Fourth superpassage or 6th cross drainage work at 15th mile 4th furlong and 8·93 chains in lieu of plans Nos. 57 and 58	13,500	6,000	..	..	6,000
		Do. do. ..	34	Fifth superpassage or 7th cross drainage work at 15th mile 7th furlong and 6·21 chains in lieu of plans Nos. 57 and 58	13,500	6,000	..	..	6,000
		G. Bridges	35	Bridge, plan No. 69	5,700	..	..	975	975
		Do.	36	First accommodation bridge, plan No. 70 ..	3,500		..	..	1,000
		Do.	37	Second do. do.	3,500	3,000	..	..	1,000
		Do.	38	Third do. do.	3,500		..	..	1,000
		L. Earthwork	39	Excavation	71,665	16,000	..	..	16,000
				IV Reach.					
		A. Preliminary	40	Surveying and lockspitting 4th and 5th reaches ..	1,050	..	..	210	210
		D. Regulators	41	No. I Irrigation sluice	1,150	..	..	1,140	1,140
		F. Cross drainage work ..	42	Culvert at 17 miles 3 furlongs in lieu of inlet and outlet, plans Nos. 57 and 58	5,400	2,000	..	..	2,000
		K. Buildings	43	Rest-house at Metupatty	4,160	..	..	4,160	4,160
		L. Earthwork	44	Excavation	8,395	3,000	..	..	3,000
				V Reach.					
		B. Land	45	Compensation for land	10,975	6,557	..	..	6,557
		F. Cross drainage works ..	46	Constructing a superpassage for Shattiar crossing in lieu of plan No. 65	17,000	10,000	3,000	..	7,000

Statement showing the redistribution of allotments, Irrigation, for 1890-91—*cont.*

Division.	Main head.	Sub-head.	Number of item.	Name of work.	Amount of estimate.	Existing grant for 1890-91.	Modification of allotment applied for. Reduction.	Modification of allotment applied for. Increase.	Proposed grant.
					RS.	RS.	RS.	RS.	RS.
				V Reach—cont.					
No. II Periyar Division—*cont.*	(2) Main Canals and Branches—*cont.*	F. Cross drainage works.	47	Constructing a superpassage for Marungaliar crossing in lieu of plan No. 66	21,500	7,000	1,000	..	6,000
		Do. do. ..	48	Inverted syphon, plan No. 72	6,690	6,000	2,000	..	4,000
		G. Bridges	49	Bridge at 18th mile 5th furlong and 17·5 chains, plan No. 71	3,640	3,600	..	..	3,600
		Do.	50	Bridge, plan No. 72	4,010	4,000	623	..	3,377
		L. Earthwork	51	Excavation	29,035	10,000	1,000	..	9,000
				VI Reach.					
		B. Land	52	Compensation	12,205	..	..	10,000	10,000
		L. Earthwork	53	Excavation	35,375	..	..	10,000	10,000
				VII Reach.					
		B. Land	54	Compensation	5,315	..	..	5,315	5,315
		L. Earthwork	55	Excavation	22,405	..	..	5,172	5,172
				VIII Reach.					
		B. Land	56	Compensation	7,475	..	..	7,000	7,000
		L. Earthwork	57	Excavation	9,475	..	..	5,000	5,000
				Total ..	..	2,39,400	21,409	67,151	2,85,142
				DISTRIBUTARIES.					
				No. I Branch Channel.					
		A. Preliminary	58	Preliminary expenses	2,335	1,000	..	..	1,000
		D. Regulators	59	Head-sluice in lieu of plan No. 37	1,150	340	..	141	481
		E. Falls and weirs ..	60	No. I Fall and sluice combined, plan No. 51 ..	1,144				
		Do.	61	,, II Do. do. do. ..	1,144	210	210	..	..
		Do.	62	,, III Do. do. do. ..	1,144				
		Do.	63	,, IV Do. do. do. ..	1,144	2,900	141	..	572
		Do.	64	,, V Do. do. do. ..	1,144				438
		Do.	65	,, VI Do. do. do. ..	1,144				714
		Do.	66	,, VII Do. do. do. ..	1,144				1,035
		L. Earthwork	67	Excavation 1st Branch channel	13,530	4,310	..	..	4,310
				No. II Branch Channel					
		E. Falls and weirs.. ..	68	First fall, plan No. 51	670	..	..	280	280
		Do.	69	Two falls, plan No. 51	1,280	280	..	..	280
		F. Cross drainage works ..	70	Culvert across 2nd Branch channel in lieu of plan No. 68	730	..	..	335	335
		L. Earthwork	71	Excavation	5,500	2,260	..	395	2,655
		O. Miscellaneous	72	Three Irrigation sluices, plan No. 42	960	360	..	..	360
		D. Regulators	73	Head-sluice to 2nd Branch channel, plan No. 37 ..	1,150	..	..	193	193

			No. III Branch Channel.					
(3) Distributaries.	D. Regulators	74	Head-sluice for 3rd Branch channel, plan No. 37.	1,150	1,150	129	..	1,021
	Do.	75	Head-sluice from 3rd Branch channel for subsidiary branch channel, plan No. 37	1,150	..	..	1,150	1,150
	Do.	76	Regulator, plan No. 39	480	480	..	..	480
	E. Falls and weirs	77	Three falls, plan No. 51	2,310	2,310	..	..	2,310
	Do.	78	Two do. do.	1,520	1,520	..	..	1,520
	Do.	79	Two do. do.	1,440	1,440	..	..	1,440
	Do.	80	Two do. do.	1,420	1,420	..	..	1,420
	Do.	81	Three do. do.	2,010	2,010	..	..	2,010
	F. Cross drainage works ..	82	Culvert, plan No. 68	2,740	2,740	..	..	2,740
	L. Earthwork	83	Excavation 3rd Branch channel	9,240	6,740	..	1,086	7,826
	O. Miscellaneous	84	Five Irrigation sluices, plan No. 41	1,650	1,650	1,650	..	..
	Do.	85	Four do do. 42	1,280	1,280	1,280	..	..
	Do.	86	Two do. do. 43	620	620	620	..	..
	Do.	87	Two do. do. 44	600	600	600	..	..
			No. IV Branch Channel.					
	B. Land	88	Compensatien for lands	8,100	8,100	..	..	8,100
	D. Regulators	89	Head-sluice for the 4th Branch channel, plan No. 36	1,840	2,500	660	..	1,840
	Do.	90	Head-sluice from 4th Branch channel for subsidiary branch channel, plan No. 37	1,150	1,150	..	..	1,150
	Do.	91	Five regulators, plan No. 39	2,400	2,400	..	..	2,400
	E. Falls and weirs	92	Two falls, plan No. 50	3,440	3,440	3,440	..	..
	Do.	93	One fall, do. 50	1,750	1,710	1,710	..	..
	Do.	94	Threefalls, do. 51	2,190	2,190	2,190	..	..
	Do.	95	Two do. do. 51	1,400	1,400	1,400	..	..
	Do.	96	Two do. do.	1,340	1,340	1,340	..	..
	Do.	97	Two do. do.	1,280	1,280	1,280	..	..
	Do.	98	Two do. do.	1,780	1,780	1,780	..	..
	Do.	99	Two do. do.	1,740	1,740	1,740	..	..
	Do.	100	Two do. do.	1,600	1,600	1,600	..	..
	Do.	101	Three do. do.	2,250	2,250	2,250	..	..
	G. Bridges	102	Three road tunnels, plan No. 41	2,370	2,370	..	..	2,370
	L. Earthworks	103	Excavation 4th Branch channel	37,750	37,750	12,750	..	25,000
	O. Miscellaneous	104	Fourteen irrigation sluices, plan No. 41 ..	4,620	4,620	4,620	..	..
	Do.	105	Six do. do. 42 ..	1,920	1,920	1,920	..	..
	Do.	106	Four do. do. 43 ..	1,240	1,240	1,240	..	..
	Do.	107	Two do. do. 44 ..	600	600	600	..	..
			Total ..	..	1,17,000	45,150	3,580	75,430
			Grand Total ..	..	3,56,400	66,559	70,731	3,60,572
			Establishment at 23 per cent. on Rs. 22,315—4,172 = 18,143 transferred from Works to B. Land ..	..	78,600	4,172	..	74,428
				..	4,35,000	70,731	70,731	4,35,000

PERIYAR,
11th September 1890.

(Signed) D. McN. CAMPBELL, Major, R,E.,
Superintending Engineer, Periyár Project.

ORDER—dated 6th October 1890, No. 554 I., Public Works.

Sanctioned.

(True Extract.)

(Signed) J. PENNYCUICK, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Superintending Engineer, Periyár Project.
„ Chief Engineer for Irrigation.
„ Examiner, Public Works Accounts.

IRRIGATION.
ACCOUNT.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated October, 6th.

Recd. *Encl.*

G.O., 6th Oct. 1890, No. 554 I.

OCTOBER.

Redistribution of Allotments, Irrigation, Periyar Project

The proposed — for the year 1890-91, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper :—

No. 508 T.C.

REPORT by the Superintending Engineer, VI Circle, on the Revised Estimate, amounting to Rs. 82,300, for raising the Coleroon left flood bank from the bridge to the Nundyar anicut in the Trichinopoly taluk.

The original estimate, amounting to Rs. 89,590, was sanctioned in G.O., No. 541 I., dated 3rd September 1887, and it provides for raising the bank a distance of nearly 17½ miles to 4½ feet above the flood level of 1858, with top width of 9 feet and side slopes 2 to 1 on river side and 1½ to 1 on the land side, with the exception of 3 miles between 527 feet below B.M. 22 and 600 feet below B.M. 25, for which the top width is to be 18 feet, as it forms a portion of road from Kaduvoi drain to lower anicut. The original estimate comprises of the following items :—

	RS.
Earthwork	76,208
Turfing both edges of bank	967
Compensation for land	1,636
Compensation for land to be temporarily occupied for obtaining earth dug	4,759
Improving 10 surplus and 1 irrigation sluices	5,552
Repairing Nundyar and Kulyaur anicuts	468
Total ...	89,590

2. The revised estimate is based on Executive Engineer Mr. Larminie's suggestions, approved by the Chief Engineer for Irrigation in his memo. No. VI/29 T.J., dated 25th March 1890. It provides for raising the bank from Coleroon bridge to high ground at Sengaviur, a distance of about 17 miles. The bank is to be made 4½ feet above the flood level of 1858 as originally proposed to Kaduvoi drain. The combined road and bank below this drain for a length of 3 miles (between 527 feet below B.M. 22 and 600 feet below B.M. 25) is to be provided in front with a guard bank 2 feet above the flood level of 1858, with top width of 2 feet and side slopes 2 to 1. No provision for earthwork is made in the estimate for the remaining portion of half mile of bank from high ground to bank up either the Kulyaur or Nundyar rivers, for local inquiries show that floods have not backed up far, or risen over the fields to any damaging depth. Provision for improvements to the wings and returns of 10 surplus and 1 irrigation sluices is also made in the estimate.

The revised estimate comprises the following items :—

	RS.
Earthwork	67,068
Earthwork for cattle ramps	664
Turfing both edges of bank	879
Compensation for land	1,636
Compensation for land to be temporarily occupied for obtaining earth dug	4,759
Improving 10 surplus and 1 irrigation sluices	6,825
Repairing Nundyar and Kulyaur anicuts	469
Total ...	82,300

3. It will be observed from the comparative statement attached to the estimate that, by the revision now made, there is a saving of Rs. 7,290 from the original sanctioned estimate.

4. The rates entered are fair, and the estimate is recommended for sanction.

TRICHINOPOLY,
7th August 1890.

(Signed) A. C. SMITH, Lt.-Col., R.E.,
Superintending Engineer, VI Circle.

No. 138 I.

Submitted to Government with a recommendation that the revised estimate of Rs. 82,300 as slightly raised in this office be sanctioned.

CUDDAPAH,
25th September 1890.

(Signed) G. T. WALCH,
Chief Engineer for Irrigation.

To the Joint Secretary to Government,
Public Works Department, Irrigation Branch.

ORDER—dated 7th October 1890, No. 557 I., Public Works.

The following revised estimate, amounting to Rs. 82,300, is sanctioned in supersession of the estimate of Rs. 89,590 sanctioned in G.O., No. 541 I., dated 3rd September 1887 :—

Irrigation.
43. Minor Works and Navigation.
Agricultural Works.
Trichinopoly Division.
River Embankments.
Original Works.

	RS.
Coleroon left bank from Coleroon bridge to Nundyar anicut, raising, estimate	82,300

2. This sanction has been registered as No. 64 I. of 1890-91.

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, VI Circle, with enclosures.
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated October, 7th.

Recd. *Encl.*

G.O., 7th Oct. 1890, No. 557 I.

OCTOBER.

Raising Coleroon Left Bank

Revised estimate amounting to Rs. 82,300 for — from Coleroon bridge to Nundyar anicut, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following paper :—

Petition from the ryots of Ráyalcheru, Tadpatri taluk, Anantapur district, dated 28th July 1890.

Endorsement by the Private Secretary to the Right Honorable the Governor, dated 5th August 1890.

Endorsement by the Revenue Department, No. 5095, dated 18th August 1890.

Abstract.—Regarding restoration of the new tank and repairs to the bund and calingula of the old tank at Ráyalcheru.

Order—dated 7th October 1890, No. 559 I., Public Works.

The petitioners are informed that the estimate for the repair of Ráyalcheru old tank was framed after due consideration of the requirements of the case and that their request to restore the new tank also cannot be acceded to.

2. If it is found that any portion of their lands are unfavorably affected by the abandonment of the new tank they should bring the matter to the notice of the Collector of the district.

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
„ Superintending Engineer, III Circle.
„ Revenue Department.
„ Petitioners.

IRRIGATION.
ACCOUNT.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dat d October, 7th.

Recd *Encl.*

G.O., 7th Oct. 1890, No. 559 I.

OCTOBER.

Rayalcheru old tank,
Anantapur District

Passing orders on petition from the ryots of Ráyalcheru, requesting to repair the — and to restore the new tank.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following paper :—

From Colonel W. H. BURTON, R.E., Superintending Engineer, V Circle, to the Chief Engineer for Irrigation, dated Chepâk, 4th August 1890, No. 2116.

I have the honor to forward, for your early sanction, a plan and estimate of Rs. 9,800 for constructing a surplus weir across Kattur madugu to supply the Kattur tank and partially the Thattamangi tank in Ponnéri taluk.

2. I consider the section of wings and return rather slender, and, if approved, I propose to build as shown in pencil so as to render them strong without adding anything further to the estimate cost.

3. The necessity for the construction of the weir is fully explained in the report accompanying the estimate.

Enclosure.

Report and specification to accompany estimate and plans for constructing a weir across the Kattur Madugu to supply the Kattur Tank and partially the Thattamangi Tank.

	RS.
Amount of estimate	11,000

The Superintending Engineer's notes of inspection for the 3rd February 1890 contain the following remarks :—

" *To the Vâyalúr Salt Factory bund.*—About ten years ago the Salt Department raised a bund about 3,028 yards in length and of irregular height across the valley naturally drained by the Kattur madugu. Above the bund the drainage area is about 32 square miles (24 drained by the madugu, 8 by other drainages)" * * *

* * * * *

" I then went up the Kattur madugu channel about 2 miles to a spot where are the remains of two weirs. These were at different times built across the madugu to hold up the water to a sufficient height to fill the Kattur tank through a sluice built in the bund dividing the madugu left bank from the tank. Kattur tank (No. 87 in the list of Imperial works) is surrounded by its bund and gets its sole supply through the sluice. Several years ago the last of the two old weirs failed, when a bund was erected across the madugu just below the sluice, and in the cyclone of 31st October 1888 it failed and floods passed on to the salt factory bund destroying it, or whatever was then left of it, for it had been frequently destroyed, or partly so before. There are nearly 24 square miles of drainage area above this, so if, as there is reason to believe, it is possible to supply Kattur tank in any other and less dangerous fashion than that in vogue heretofore it will be best to adopt it. Were there no bund across the madugu to be breached the salt bund 2 miles below it would be freed from all danger from sudden heavy floods by reason of the madugu bund being breached."

In his inspection notes for the following day (4th February 1890) the Superintending Engineer writes :—

" *To Thattamangi tank channel head-sluice in right flood bank of the Naranaveram river.*— * * * The sub-divisional officer thinks, and I am inclined to believe he is right, that if a branch channel was taken off the Thattamangi tank supply channel (about 2,000 yards from the head) and lead to the Kattur tank (irrigating 924 acres ayacut Rs. 3,403) that it would efficiently supply Kattur tank and so avoid the present faulty and dangerous supply by means of the Kattur madugu, &c., which can only be effected at a cost of several thousand rupees. The Executive Engineer is requested to investigate this and submit an estimate of cost."

3. In accordance with the above instructions a survey and levels were taken of the Thattamangi tank supply channel, Kattur tank supply channel, Kattur madugu with the existing bund across it, &c.

The existing state of things in connection with Kattur tank is as follows :—

(a) What is marked as Kattur tank supply channel is in reality no supply channel because the head is closed by the river flood bank and has been for two or three years. It may be opened again. The tank is entirely supplied by a drainage area of 14 square miles by putting a bund marked C on the plan across the Kattur madugu to raise the level of the water to that of F.T.L. The water passes in to the tank through the inlet sluice marked L on the plan, and as soon as the tank is full it is closed.

(b) The water dammed up by the bund C runs into the Anaimugaton madugu and into the irrigating channel marked B as well as to the Pira madugu and is their only source of supply. From this channel and the madugus by overflow and bailing there is irrigated 489·11 acres yielding a revenue of Rs. 1,310. 459·11 of these acres belong to the village of Attamananjeri yielding a revenue of Rs. 1,220, and the remaining 30 acres yielding a revenue of Rs. 90 belong to the village of Sirulapanjeri. From the foregoing it is clear that the water of the Kattur madugu must be dammed up, or the Government must lose in revenue Rs. 1,310 and pay compensation to the landowners. These considerations, if there were no others, appear sufficient to show the necessity of continuing to dam up the water.

The Thattamangi tank has three sources of supply; with all this the supply is considered to be insufficient. It has two supply channels direct from the river; one only, Thattamangi supply channel, is shown in the plan; the other source of supply is due to the damming up of the Kattur madugu, by this means the water is forced down the Anaimugaton madugu, and when it is high enough it overflows at N and falls into the Pira madugu, and from there into the Thattamangi tank. If the damming up of the Kattur madugu is discontinued the Thattamangi tank will lose this source of supply, one of much importance. This is another vital objection to the proposal of discontinuing the dam.

Now regarding the supplying of the Kattur tank by means of the Thattamangi tank supply channel. The F.T.L. is 12·61 above M.S.L. and the river bed is 7·80, so there would have to be in the river at least 7 feet of water before the tank could be filled. this is supposing the channel to be 1½ miles long with a fall of 1½ feet per mile. The channel as it now exists could not supply the tank. The point in the present channel from which the tank could be most conveniently supplied is marked A in the survey and its bed level is 4·95 and the full channel level here is 9·95 above M.S.L. while F.T.L. is 12·61 or 2·66 higher. To raise the full channel level would involve new head works, widening and strengthening the channel, which would cost about Rs. 12,000, and then it would only fill the tank in years of good rainfall.

It appears from the foregoing that there is nothing left but to reconstruct a weir on the Kattur madugu, one which will not be likely to fail.

There is at present a bund at C, but this will be carried away the first ordinary monsoon as was the bunds of 1887 and 1888, and the water will rush down and most likely damage the Váyalúr salt factory bank as it has done on former years. The dam will then have to be rebuilt and the bank repaired at considerable cost.

The drainage area of the Kattur madugu is 14 square miles which gives a discharge of 2,904 cubic feet per second ($D = 500\ M^{\frac{2}{3}}$) and the length of weirs with clear overfall and head of 1½ feet required is 473 feet, and the length for a byewash with the same head is 679 feet. It was thought that a byewash might be constructed on the south of the present bund, marked DD in plan, but there is not sufficient length here for a byewash; on the other hand it could not possibly answer because of the rapid fall of 8 feet in a little over a quarter of a mile over very bad soil. The little water that passed over here last year has cut the ground into gullies, and if the water is allowed to continue to pass this way, over a byewash, the gullies will get deeper and deeper and work back until the byewash is carried away. All things considered there appears to be nothing better than a good substantial weir to meet the ends in view, a plan for which is herewith forwarded.

The weir is to be 473 feet long with 1½ feet of water going over it; but in case of the river flood bank breaching the weir is made strong enough to carry 2½ feet or even 3 feet of water. The level of the crest is to be 11·11 above M.S.L. The level of the crest of one of the ruined weirs is 11·52 (the level of the other ruined weir could not be found), but this is considered a little too high by the ryots and they think 11·11 a good level as it would just do to irrigate without submerging the fields of Attamananjeri and Sirulapanjeri villages. The Kattur tank would be filled when 1½ feet of water would be passing over the weir and the shutters of the sluice would then be closed as has always been the custom. The surface level would then be 12·61 which is F.T.L.

The objects of the weir are :—

(1) To supply the Kattur tank, being the only source of supply, revenue Rs. 3,403.
(2) To partly supply the Thattamangi tank, revenue Rs. 1,316.
(3) To keep up water (being the only source) to irrigate 489·11 acres, revenue Rs. 1,310.
(4) To prevent the frequent breaching of the Kattur madugu bund, and thus preventing the water of the madugu rushing down on the Váyalúr salt factory bank and breaching it.
(5) To save the revenue derived from the above sources and to save the yearly expense of restoring the temporary bund and repairing the salt factory bank.

Specification.—The proposed weir is to be constructed immediately in rear of the present bund, the position of which is marked in red. The bund will not be removed until the weir is complete and then it will be removed to one foot below the level of the crest. The earth so removed will be used to make up the earth to the wings and fill up some pits in rear. The level of the deepest pit is 2·36 and level of the bottom of the foundation to be—1·89 or 1·89 below M.S.L. The foundations are to be concrete made of 3 of broken bricks to 1 of slaked lime. The quantity of sand will depend on the quantity of fine material got from the breaking of the bricks for concrete; the quantity usually found necessary is one of sand, and the rate is made accordingly. The remainder of the work is to be brick in mortar plastered with cement half inch thick with the exception of the apron and retaining wall which is to be three-quarter inch in thickness. The plaster will be made of 1 cement to 2 of sand.

This is not a good specification for the concrete. The mortar should be made of the mixture which is found to give good results, probably 1 lime ½ surki, 2 sand will be about the thing and then to one measure of this should be added three measures of broken brick.

The apron is of concrete and generally plastering concrete is a mistake, see para. 2 of Circular Memorandum ("Extended use of concrete" &c.) with Circular 17 E., 6th December 1888. If it is done at all it must be so whilst the concrete is quite fresh and wet or it will certainly peel off.

9th August 1890. (Signed) G. T. WALCH.

Accompanying this there is 1 plan, 2 sheets of levels, 1 survey.

The work is to be done according to the standing specification the custom of the Public Works Department and to the satisfaction of the Executive Engineer.

Dimensions in detail will be found in the plan and estimate.

18th June 1890.

(Signed) A. MILNE, Lieutenant,
Offg. Executive Engineer, Chingleput Division.

No. 140 I.

Submitted to Government. The estimate as altered in this office amounts to Rs. 11,000 and is recommended for sanction.

CUDDAPAH,
26th September 1890.

(Signed) G. T. WALCH,
Chief Engineer for Irrigation.

To the Joint Secretary to Government,
Public Works Department, Irrigation Branch.

ORDER—dated 7th October 1890, No. 560 I., Public Works.

The following estimate is sanctioned :—

Irrigation.
43. Minor Works and Navigation.
Irrigation and Navigation.
Works for which neither Capital nor Revenue Accounts are kept.
Chingleput Division.
Original Works.

	RS.
Constructing a surplus weir across Kattur madugu to supply the Kattur tank and partially the Thattamangi tank, estimate ...	11,000

2. This sanction has been registered as No. 65 I. of 1890-91.

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
,, Superintending Engineer, V Circle, with 5 enclosures.
,, Examiner, Public Works Accounts.
,, Revenue Department.
,, Editors' Table.

IRRIGATION.
ACCOUNT.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated October, 7th.

Recd. *Encl.*

G.O., 7th Oct. 1890, No. 560 I.

OCTOBER.

Surplus Weir across Kattur Madugu, Chingleput Division

Estimate of Rs. 11,000, for constructing a —, to supply the Kattur tank and partially the Thattamangi tank, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper:—

From J. HANNAN, Esq., Superintending Engineer, II Circle, to the Chief Engineer for Irrigation, dated Bezváda, 16th September 1890, No. 1544 K.S.

I have the honor to forward, herewith, a revised estimate and comparative statement for land taken up in connection with the Puligedda aqueduct for your sanction.

2. The revised estimate amounts to Rs. 4,268 and the area taken up is 46·68 acres.

3. The original estimate sanctioned in G.O., No. 1057 I. of 25th November 1884 was only for acquiring 16·42 acres at a cost of Rs. 1,257, but it was subsequently found necessary to acquire the area now estimated for and which is shown on the accompanying tracing. The land was demarcated and occupied some years ago, but for various reasons the Revenue Department did not settle the compensation until recently.

4. The object for which the land was acquired is explained in the letter printed with the above Government Order. This object has not, I am sorry to say, been attained. The nanal planted to stay erosion on right bank was allowed to extend itself to such an extent into the river bed that it caused a set on left bank and considerable erosion.

5. This year the axis of the river has been laid down and the correct bed width and all the nanal growing within the limits of the bed carefully eradicated.

6. The amount of the estimate can be met from the provision for unforeseen works.

ORDER—dated 7th October 1890, No. 561 I., Public Works.

The following revised estimate, amounting to Rs. 4,268 for compensation for land acquired in connection with the Puligedda aqueduct, is sanctioned in lieu of the provision of Rs. 1,257 made for land compensation in the classified abstract estimate * printed in Proceedings, Madras Government No. 577 I., dated 1st October 1888, the excess of Rs. 3,011, being met from

* *Vide* item 592.

the balance of the amount reserved for unforeseen works which will then be reduced to Rs. 1,40,146 :—

Capital Expenditure not charged to Revenue.
49. Irrigation.
Kistna Delta System.
Eastern Section.
I. Works.
Bank canal.
(2) Main Canals and Branches.
B. Land.

	RS.
Compensation for land acquired for Puligedda aqueduct, estimate ...	4,268

2. This sanction has been registered as No. 66 I. of 1890-91.

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, II Circle, with 3 enclosures.
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated October, 7th.

Recd. *Encl.*

G.O., 7th Oct. 1890, No. 561 I.

OCTOBER.

Compensation for land; Kistna District

Revised estimate amounting to Rs. 4,268 for — acquired in connection with the Puligedda aqueduct, sanctioned with remarks.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper :—

From J. HANNAN, Esq., Superintending Engineer, II Circle, to the Chief Engineer for Irrigation, dated Bezváda, 9th September 1890, No. 1485 K.S.

I have the honor to forward herewith, for sanction, a revised estimate and comparative statement for the work widening the Masulipatam canal, 1st reach.

2. The revised estimate shows a saving of Rs. 79,969 which can be credited to the lump sum provision for unforeseen works.

3. The saving is on rates. The original estimate provided for taking the spoil over the right bank; it has, however, as you are aware, been deposited on both berms.

4. The work is completed all to widening out the first 4½ miles from 80 to 95 feet, but this cannot be done until the Bank canal is dug. Owing to the reduction of bottom width in this reach from 107 to 95 feet sanctioned in para. 8 (*a*) of your inspection notes printed with G.O., No. 193 I. of 24th March 1890, there will be a saving in quantity in this reach, but this has not been taken into account in the estimate now submitted as the section below the 4½ miles to Kankipad lock will have to be deepened 6 inches or so to compensate for the 4½ inches less of head entailed by the extra surface fall of 1 inch a mile, and this can be effected from the saving in quantity in the first 4½ miles.

No. 139 I.

Submitted to Government. The revised estimate as slightly reduced in this office amounts to Rs. 1,05,200 and is recommended for sanction.

CUDDAPAH,
25th September 1890.

(Signed) G. T. WALCH,
Chief Engineer for Irrigation.

To the Joint Secretary to Government,
Public Works Department, Irrigation Branch.

ORDER—dated 7th October 1890, No. 562 I., Public Works.

The following revised estimate, amounting to Rs. 1,05,200, for improving and widening the Masulipatam canal, Kistna Eastern delta, is sanctioned in lieu of the provision of Rs. 1,85,190 made for the work in the classified abstract estimate * printed in Proceedings of the Madras Government, No. 577 I., dated 1st October 1888, the saving of Rs. 79,990 effected

* *Vide* item 36.

by the present estimate being added to the balance of the amount reserved for unforeseen works which will then be raised to Rs. 2,20,136 :—

Capital Expenditure not charged to Revenue.
49. Irrigation.
Kistna Delta System.
Eastern Section.
I. Works.
(2) Main Canals and Branches.
Masulipatam Canal.
L. Earthwork.

	RS.
Improving and widening the canal, estimate	1,05,200

2. This sanction has been registered as No. 67 I. of 1890-91.

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, II Circle, with enclosures.
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated October, 7th.

Recd. *Encl.*

G.O., 7th Oct. 1890, No. 562 I.

OCTOBER.

Masulipatam Canal

Revised estimate amounting to Rs. 1,05,200 for improving and widening the —, 'Kistna Eastern delta, sanctioned with remarks.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.

READ—the following papers:—

From J. HANNAN, Esq., Superintending Engineer, II Circle, to the Chief Engineer for Irrigation, dated Bezváda, 3rd April 1889, No. 1 N.L.

In continuation of this office letter, No. 151 N.L., dated 26th May 1887, I have the honor to forward herewith, for your approval and sanction of Government, an estimate, in duplicate, amounting to Rs. 17,870, for improvements to Irakam flood bank.

2. The necessity for the improvements to the bank and provision of outlets to discharge local drainage is fully explained in the report accompanying the estimate which has been countersigned by the Collector of Nellore in token of his approval.

ENCLOSURE.

Report to accompany Plans and Estimates for the Irakam Flood Embankment.

	RS.	A.	P.
Amount of estimate	17,870	0	0
Ayacut Acres 2,493·60 enclosed by the flood bank.			
Revenue due to cultivation	2,124	5	0
Revenue due to annual sale of shells	5,000	0	0
Date of last repairs.—About 15 years ago.			

The total of the estimate is Rs. 17,870. The revenue derived from cultivation and sale of shells is Rs. 7,124-5-0 or little less than 40 per cent. of the amount.

The Irakam flood embankment, which runs round the Irakam island to protect the cultivation from the monsoon tides of Pulicat lake, is now in very bad order. This was partly repaired about 15 years ago, when the island belonged to the Ponnéri taluk in the Chingleput district. It has since been much worn down. In the cyclone of November 1886 a high tidal wave of unusual height rose and flowed over the low portions of the bank and greatly damaged the young crops on the ground.

The embankment now proposed is to be raised 3 feet above the cyclone tidal wave. The top width of the bank is to be 4 feet and side slopes 2 to 1.

To discharge the local drainage due to rains, the embankment is provided with 10 outlets having self-acting shutters. These will keep out all floods from the Pulicat lake and discharge the drainage. Some of the old surplus sluices are in ruins and have very little of the masonry left. These will therefore be altogether abandoned.

The hydraulic details are noted on the plan. The rates are high owing to the great distance the materials have to be brought both by cart and boat.

The rate of Rs. 3-8-0 has been allowed in the estimate for 1,000 cubic feet of earthwork because the earth has to be obtained in some places from puttah lands where compensation will have to be paid and in some places it will have to be brought from an average distance of 150 feet, hence the increase in rate.

(Signed) H. H. O'CONNELL,
Executive Engineer, Nellore Division.

23rd February 1889.

Memorandum to the Superintending Engineer, II Circle, dated 13th April 1889, No. II/26 N.L.

From H. H. O'CONNELL, Esq., Executive Engineer, Nellore Division, to the Superintending Engineer, II Circle, dated Muthukúr, 20th July 1889, No. 251.

[Your No. 37 N.L. of 20th April 1889.]

With reference to the above number on Chief Engineer for Irrigation's memo. No. II/26 N.L. of 13th idem, I have the honor to forward herewith survey plan of

Irakam island enlarged to four times the scale of the taluk map with hydraulic statement showing the area to be drained by each outlet, and to reply to the questions as follows:—

No. (1)—The embankment was originally constructed by Government.

No. (2)—The fund head to which the last repairs executed 15 years ago were charged is not known.

2. The irrigated area is 160 acres. The centre of the island consists of sand hillocks, from which the impounded rains of the monsoons are drawn off by spring channels. The crops cultivated are an inferior grain of black paddy. Vadasambam and ragi are also cultivated.

3. The coefficient is taken at 100. The area of the sandy portion in the centre is not taken into account as it is assumed that all the rain is absorbed by the sand and does not drain away. The correctness of this assumption is proved by there being no signs of any existing drainage channels.

No. 367 N.L.

Forwarded to the Chief Engineer for Irrigation with reference to his memo. No. II/26 N.L. of the 13th April 1889, and in continuation of this office No. 294 N L. of the 3rd instant, together with enclosures.

Bezvada,
30th July 1889.

(Signed) J. HANNAN,
Superintending Engineer, II Circle.

Memorandum to the Superintending Engineer, II Circle, dated 9th August 1889, No. II/49 N.L.

From H. H. O'CONNELL, Esq., Executive Engineer, Nellore Division, to the Superintending Engineer, II Circle, dated 27th September 1889, No. 405.

With reference to your endorsement No. 438 N.L., dated 26th August 1889, on the copy of the Chief Engineer's memo. No. II/49 N.L., dated 9th August 1889, I have the honor to report that the village of Irakam is above high tide and about M.F.L., the last cyclone wave having approached the village.

2. Nearly the whole of the 2,493 acres will be flooded without an embankment; the last cyclone wave submerged the whole.

No. 583 N.L.

Copy forwarded to the Chief Engineer for Irrigation with reference to his memo. No. II/49 N.L. of the 9th August 1889.

3rd October 1889.

(Signed) J. HANNAN,
Superintending Engineer, II Circle.

From G. T. WALCH, Esq., Chief Engineer for Irrigation, to the Collector of Nellore (through the Superintending Engineer, II Circle), dated 9th August 1889, No. 50 N.L.

In a report made to me with reference to proposed considerable expenditure on a bank round the Irakam island in the Pulicat lake it is stated that the direct annual revenue derived by Government from that island is "*for sale of shells*" Rs. 5,000, "from cultivation" Rs. 2,124-5-0, and I shall feel obliged if you will inform me what portion, if any, of the latter sum is derived from special or extra assessment on the "wet" cultivation, which is said to be in area 160 acres and to be irrigated by "spring channels" from the sand dams.

2. At present I do not see my way to recommend to Government the expenditure of a considerable sum of public money on the bank in question, and I shall be glad of your views on the subject.

3. I shall feel obliged if you will send your answer through the Superintending Engineer, II Circle, in order that he may be aware of what is going on about the matter.

From C. D. MACLEANE, Esq., Collector of Nellore, to the Chief Engineer for Irrigation (through the Superintending Engineer, II Circle), dated Nellore, 14th August 1890, No. 2409-H.

I have the honor to reply to letter No. 50 N.L., dated the 9th August 1889, and in continuation of this office Reference No. 3973-H., dated the 28th March 1890.

2. The island of Irakam yields an annual revenue of Rs. 3,000 as detailed in the margin. A statement showing particulars of beriz assessment, &c., for fasli 1298 is enclosed.

	RS.	A.	P.
Assessment on dry land ...	263	12	5
Assessment on wet land ...	2,105	13	3
Miscellaneous revenue as per village account No. 7 ...	152	15	6
Water-rate as per village account No. 6	131	0	0
Road and village cesses as per account Nos. 9 and 10 ...	383	0	2
Service inam quit-rent due to Village Service Fund	109	8	0
Total ...	3,146	1	4

3. The history of bank in question is obscure. The village officers, of whom I have made personal inquiries, say that the Dutch made the bank 50 or 60 years ago as a protective work round the cultivable and other lands of the island against the inundations of the lake, that some repairs at a cost of Rs. 5,000 were executed about 1860 when the village belonged to the Chingleput district, and that after its transfer to this district a small sum of Rs. 300 was spent again on repairs 10 or 11 years ago. They say that some three years ago measurements were made by the Public Works Department Supervisor, but that nothing more was done beyond the preparation of an estimate for Rs. 16,500.

4. In February 1887, the ryots of the village applied by petition (copy enclosed) to the Board of Revenue for urgent repair of the bank. The petition was transferred to this office and forms the subject of correspondence with the Engineer, who, in letter No. 1574, dated the 31st August 1889, states that an estimate for improving the bank has been forwarded to the Superintending Engineer.

5. The island yields a revenue of upwards of Rs. 3,000. The area of wet lands under occupation is 369 acres assessed at Rs. 1,657. All these lands are irrigated by lift from dorvus or natural pools, but no lift remission is granted. Of this area an extent of 165 acres on an average is cultivated with second crop, which gives an additional revenue of Rs. 500 as faslijasti. An average extent of 10 acres lies waste every year owing to the bad state of repair of the embankment. If strengthened it would bring an additional extent of 40 acres under cultivation, thus realizing an annual revenue of about Rs. 200.

6. Apart from the prospect of increased revenue, I would recommend that the work be taken on hand in consideration of security to life and property. The villagers are now in danger of inundation during every rainy season.

ENCLOSURE.

Petition from the Ryots of Irakam Village in Pólúr Division, Gúdúr Taluk, Nellore District, to the Secretary to the Board of Revenue, dated Irakam Village, 15th February 1887.

MOST RESPECTFULLY SHOWETH,—That your petitioners beg to bring to the notice of the Government through the Board that the said village, in question, is an island, surrounded by canal and sea water in a dangerous locality, solely depended by an anicut, which prevents the said water coming in contact with their paddyfields and dwelling-houses.

2. That this anicut has undergone a thorough repair only in fasli 1278 when the village was originally with the Chingleput district, in Ponnéri taluk.

3. That after the transfer of the said village to the Nellore district, there has been done, in fact, no repairs to the said anicut although repeated applications were sent to the numerous Collectors, who were then in charge of the district, but that of 10 years ago Government have slightly repaired a very small portion of it during winter, on the understanding that it would be looked into properly at a hot weather.

4. That the cyclones of 1885 and 1886 have completely washed away the so decayed anicuts, thus allowing the salt water come into the village and destroy their paddyfields to a great extent. The petitioners then went for relief to the nearest Deputy Tahsildar, who, after the disastrous flood was over, came and inspected the spot, but did nothing up to date.

5. That if the said anicut is not repaired in time, before the approaching rainy season, the village consisting of more than 3,000 inhabitants will have to meet the danger of losing their life, chiefly in a village yielding an annual revenue of Rs. 8,000 to the Government.

6. That the petitioners, in conclusion, beg to request the Government to repair the said anicut speedily.

7. That your petitioners as in duty bound shall ever pray.

No. 323 N.L.

Forwarded.

(Signed) J. HANNAN,
Superintending Engineer, II Circle.

28th August 1890.

No. 141 I.

Submitted to Government.

OOTACAMUND,
4th September 1890.

(Signed) G. T. WALCH,
Chief Engineer for Irrigation.

ORDER—dated 8th October 1890, No. 563 I., Public Works.

The estimate, Rs. 17,800, for embankment round the island of Irakam, Pulicat lake, is sanctioned, but the work will not be put in hand till the Collector of the Nellore district has taken such agreements as will ensure the continuous repair and upkeep of the embankment and works connected with it being carried out by the villagers concerned after the work now sanctioned has been executed.

2. It will be ascertained in the Revenue Department whether the principal inhabitants of the village and especially Iswara Venkatachelam Mudaliar are willing to bind themselves to keep the embankment in repair in future by village labor.

3. This sanction has been registered as No. 68 I. of 1890-91, and classified as shown below :—

Irrigation.
43. Minor Works and Navigation.
Agricultural Works.
River Embankments.
Original Works.
Nellore Division.

	RS.
Embankment round the island of Irakam, estimate	17,800

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, II Circle, with 11 enclosures.
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated October, 8th.

Recd. *Encl.*

G.O., 8th Oct. 1890, No. 563 I.

OCTOBER.

Island of Irakam, Pulicat Lake

Estimate of Rs. 17,800 for embankment round the —, sanctioned with remarks.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.

READ—the following paper:—

Proceedings of the Board of Revenue, Mis. No. 6259, dated 30th September 1890.

ORDER—dated 8th October 1890, No. 564 I., Public Works.

Ordered accordingly that an erratum be published in the *Fort St. George Gazette.*

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
„ Superintending Engineer, VI Circle.
„ Revenue Department.

IRRIGATION.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated October, 8th.

Recd. *Encl.*

G.O., 8th Oct. 1890, No. 564 I.

OCTOBER.

Erratum

Ordered that an — be published in the *Fort St. George Gazette*, correcting the name of the village "Gullamangudi" to "Pullamangudi" in the schedule of land required for the Poigai channel published at page 659 of the Gazette.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following paper :—

From Colonel W. H. BURTON, R.E., Superintending Engineer, V Circle, to the Chief Engineer for Irrigation, dated Chepâk, 25th September 1890, No. 3026.

As suggested by the Executive Engineer, South Arcot Division, in his letter No. 601, dated 12th instant, I have the honor to request that a sum of Rs. 1,500 may be surrendered from the existing grant of Rs. 6,273 for the Veedoor tank improvements and transferred to the Sengal Odai anicut project which was sanctioned in G.O., No. 443 I., dated 15th August 1890, for Rs. 12,600.

2. The Executive Engineer reports that a commencement may be made with the work by the collection of materials during the present official year.

Order—dated 9th October 1890, No. 568 I., Public Works.

The following transfer of funds is sanctioned :—

Provincial.
43. Minor Works and Navigation.
Irrigation and Navigation.
Works for which neither Capital nor Revenue Accounts are kept.
Original Works.
South Arcot Division.

From	RS.	*To*	RS.
Veedoor tank improvements	1,500	Sengal Odai anicut project	1,500

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
„ Superintending Engineer, V Circle.
„ Examiner, Public Works Accounts.
„ Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated October, 9th.

Recd. *Encl.*

G.O., 9th Oct. 1890, No. 568 I.

OCTOBER.

Transfer of Funds, South Arcot Division

Sanctioning certain —.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper :—

From Colonel W. H. BURTON, R.E., Superintending Engineer, V Circle, to the Chief Engineer for Irrigation, dated Chepâk, 27th September 1890, No. 3061.

I have the honor to request that the allotment of Rs. 5,000 provided in the current year's budget for Rajakal surplus weir under "Capital," "Pálár anicut system," may be transferred to "Irrigation and Navigation works for which neither Capital nor Revenue Accounts are kept," as the estimate for the work was reclassified under the latter head in G.O., No. 278 I., dated 17th May 1890.

ORDER—dated 9th October 1890, No. 569 I., Public Works.

The following transfer of funds is sanctioned :—

Provincial.
43. Minor Works and Navigation.
North Arcot Division.

From Irrigation and Navigation. Works for which Capital and Revenue Accounts are kept. Pálár Anicut. Capital Account.	RS.	*To* Irrigation and Navigation. Works for which neither Capital nor Revenue Accounts are kept. Original Works.	RS.
		Rajakal channel surplus wier ...	4,940
Works	5,000	Establishment	1,136
Establishment	1,150	Tools and plant	74
	6,150		6,150

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
„ Superintending Engineer, V Circle.
„ Examiner, Public Works Accounts.
„ Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated October, 9th.

Recd. *Encl.*

G.O., 9th Oct. 1890, No. 569 I.

OCTOBER.

Transfer of Funds, North Arcot Division

Sanctioning certain —.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper :—

From Colonel H. SMALLEY, R.E., Superintending Engineer, III Circle, to the Chief Engineer for Irrigation, dated Bellary, 29th September 1890, No. 1898.

With reference to para. 3 of your Circular Memorandum No. 14 G. of 4th April 1884, I have the honor to request that the following modification of allotment may be sanctioned under Provincial Irrigation and Navigation :—

43. Irrigation and Navigation.
Works for which neither Capital nor Revenue Accounts are kept.

	Amount required.
Major Works.	
Bellary Division.	RS.
Haravakur-Kammur tank	5,360
Singanamala tank	5,000
Mudigubba tank	5,000
Tank Restoration Scheme.	
Royalcheruvu tank	4,000
Cuddapah Division.	
Tank Restoration Scheme repairs	2,000
Agricultural Works. Major Original Works.	
Cheyár embankment	5,131

	Amount not required.
Bellary Division.	RS.
Irrigation repairs	25,360
Tank Restoration repairs	4,000
Cuddapah Division.	
Tank Restoration Scheme original work	2,000

2. The estimate for Haravakur-Kammur tank, amounting to Rs. 5,360, has been sanctioned in G.O., No. 438 I., dated 13th August 1890, and those of Mudigubba and Singanamala tanks the former has been submitted on 9th September 1890 and the latter will shortly be forwarded. It is proposed to spend the amounts now asked for during this official year and is to be met from the surrender of Rs. 25,360 now made under Irrigation repairs, Bellary division.

3. An estimate for Royalcheruvu, amounting to Rs. 12,000, was sanctioned in G.O., No. 332 I., dated 14th June 1890, and a revised one for the same for Rs. 10,466 having been approved by the Chief Engineer for Irrigation in letter No. 1351 T., dated 16th August 1890, a portion of the work, amounting to Rs. 4,000, will be completed this year.

4. Rupees 2,000 required for Tank Restoration Scheme repairs in the Cuddapah division is to complete the balance of estimate that is in hand for Rs. 2,052.

5. Additional sum of Rs. 5,131 applied for Cheyár embankment under Agricultural major works is to complete the same with three head-sluices for which revised estimate, amounting to Rs. 8,820, was sanctioned in G.O., No. 250 I., dated 25th April 1890, in supersession of the provision of Rs. 3,330 made for them in G.O., No. 450 I., dated 19th September 1889.

6. The amounts that are now surrendered are not required for outlay during this year, as there are not enough sanctioned estimates.

7. Every effort will be made to spend the grant for the Irrigation Cess fund. The estimate for Roya channel is nearly ready.

ORDER—dated 10th October 1890, No. 571 I., Public Works.

The following transfers of funds are sanctioned :—

Provincial.
43. Minor Works and Navigation.
Irrigation and Navigation.
Works for which neither Capital nor Revenue Accounts are kept.
Tank Restoration Works.

From	RS.	*To*	RS.
Cuddapah division, Original works ...	2,000	Cuddapah division, Repairs	2,000
Bellary division, Repairs	4,000	Bellary division, Royalcheruvu tank.	4,000
Total ...	6,000	Total ...	6,000

Ordinary "Imperial" Works.

Bellary division, Repairs	20,239	Bellary division—	
		Haravakur-Kammur tank ...	5,360
		Singanamala tank	5,000
		Mudigubba do.	5,000
		Repairs—Reserve	4,879
Total ...	20,239	Total ...	20,239

Agricultural Works.

Bellary division, Repairs	5,121	Cuddapah—	
Establishment	1,178	Cheyár embankments	5,121
Tools and plant	77	Establishment	1,178
		Tools and plant	77
Total ...	6,376	Total ...	6,376

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, III Circle.
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated October, 10th.

Recd. *Encl.*

G.O., 10th Oct. 1890, No. 571 I.

OCTOBER.

Transfers of Funds, III Circle

Sanctioning certain — .

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper :—

From the Superintending Engineer, II Circle, dated Bezváda, 29th September 1890.

FIRST APPLICATION for additions and modifications of allotments for Irrigation Works for 1890-91.

Division.	Main and sub heads.	Names of works.	Existing grant.	Modification of allotments applied for.		Modification of allotments proposed.		Remarks.
				Reduction.	Increase.	Reduction.	Increase.	
Nellore Division.		CAPITAL EXPENDITURE ON PUBLIC WORKS NOT CHARGED AGAINST REVENUE.	RS.	RS.	RS.	RS.	RS.	
		49. IRRIGATION.						
		I. WORKS.						
		Pennér Anicut System.						
	(2) Main Canals and Branches—	Survapalli Canal.						
	L. Earthwork.	Additional improvements ..	4,472	4,472	..	4,472	..	Not required. Work finished in 1889-90.
	(2-A) Tanks and Reservoirs—	Nellore Tank.						
	B. Land ..	Compensation for Nellore tank supply channel.	140	..	..	..	..	
	O. Miscellaneous.	Mile and bench mark stones ditto.	..	..	4	..	4	To meet actual outlay.
	L. Earthwork.	Nellore tank supply channel improvements.	..	..	7,916	..	7,915	For work in hand. Estimate submitted.
	(4) Drainage and Protective Works—	Main Drain.						
	B. Land ..	Compensation for improving Main drain.	40	40	..	40	..	Not required.
		Reserve for land	320	320	..	320	..	
		Total ..	4,972	4,832	7,920	4,832	7,919	
		Add—Net increase ..	3,087	..	..	..	..	
		Total Grant ..	8,059	..	..	..	..	
		Sangam Anicut System.						
	(2) Main Canals and Branches—	Kanigiri Canal.						
	B. Land ..	Compensation for land for Kanigiri reservoir.	16,000	..	..	..	..	
	O. Miscellaneous.	Re-investigating and revising estimates.		..	26	..	26	To meet outlay incurred.
	(3) Distributaries—	Eastern Channel.						
	O. Miscellaneous.	Twenty ramps	..	..	300	..	300	Incomplete work of last year.
	Do. ..	Demarcation stones ..	..	..	36	..	36	Incomplete works of last year.
		Eastern Channel Minor Channel 3 miles 3,960 feet Right Bank.						
	(3) Distributaries— C. Works ..	Sluice 3 miles 500 feet right bank.	..	..	155	..	155	
	L. Earthwork.	Excavation	..	..	—25	..	— 25	Due to credit to work. Incomplete work of last year.

First Application for additions and modifications of allotments, &c.—*cont.*

Division.	Main and sub heads.	Names of works.	Existing grant.	Modification of allotments applied for.		Modification of allotments proposed.		Remarks.
				Reduction.	Increase.	Reduction.	Increase.	
Nellore Division—*cont.*		*Sangam Anicut System*—cont.	RS.	RS.	RS.	RS.	RS.	
		Eastern Channel Minor Channel 12 miles 2,900 feet Left Bank.						
	(3) Distributaries—C. Works ..	Head-sluice	..	..	400	..	400	
	L. Earthwork.	Excavation	..	..	120	..	120	
	O. Miscellaneous.	Demarcation stones ..	..	..	15	..	15	
		Varini Tank Supply Channel.						
	(3) Distributaries—N. Tanks and reservoirs.	Varini tank embankment ..	..	..	50	..	50	
		Minor Channel from Vidavalur Tank.						
	(3) Distributaries—C. Works ..	Vent at 2 miles 1,320 feet ..	..	..	22	..	22	
	Do. ..	Aqueduct 1 mile 1,520 feet ..	..	..	55	..	55	Incomplete works of last year.
	L. Earthwork.	Excavation and banking ..	..	..	75	..	75	
		Purini Tank Supply Channel Minor Channel 1 mile 3,960 feet.						
	(3) Distributaries—C. Works ..	Regulator and drop ..	..	..	—40	..	—40	
	Do. ..	Sluice 1 mile 3,900 feet ..	..	..	208	..	208	
	L. Earthwork.	Excavation	..	..	75	..	75	
	O. Miscellaneous.	Demarcation stones ..	..	..	3	..	3	
		Allúr Channel.						
	(3) Distributaries—L. Earthwork.	Excavation	..	..	115	..	115	
	Do. ..	Do.	3,120	3,120	..	3,120	..	Estimate sent and work cannot be done owing to water till April 1891.
		Indupur Tank Minor Channel.						
	(3) Distributaries—C. Works ..	Head-sluice	..	..	740	..	740	
	Do. ..	Vent 1,188 feet right bank ..	159	42	..	42	..	
	Do. ..	Drop 0 mile 1,670 feet ..	186	58	..	58	..	
	Do. ..	Drainage culvert 4,600 feet ..	116	..	300	..	300	
	L. Earthwork.	Excavation and banking ..	1,209	379	..	379	..	
	O. Miscellaneous.	Demarcation stones ..	..	..	153	..	153	
		Minor Branch Channel 0 mile 1,640 feet Right Bank.						
	(3) Distributaries—C. Works ..	Vent 1,640 feet right bank ..	..	..	126	..	126	Modifications proposed in accordance with the amounts of estimates sanctioned.
	L. Earthwork.	Banking	687	477	..	477	..	
	O. Miscellaneous.	Demarcation stones ..	48	5	..	5	..	
		Minor Branch Channel 1 mile 1,120 feet Right Bank.						
	(3) Distributaries—C. Works ..	Vent 1 mile 1,120 feet right bank.	..	..	126	..	126	
	L. Earthwork.	Banking	460	65	..	65	..	
	O. Miscellaneous.	Demarcation stones ..	59	7	..	7	..	
		Minor Channel at Head.						
	..	Compensation	120	120	..	120	..	
	..	Earthwork	1,934	1,934	..	1,934	..	Due to abandonment of the same.
	..	Demarcation stones ..	196	196	..	196	..	
		Gogulapalli Branch Channel Minor Channel at end of Extension.						
	(3) Distributaries—L. Earthwork.	Excavation and banking ..	..	..	5	..	5	
	N. Tanks and reservoirs.	Breaching Gogulapalli tank bund.	..	..	55	..	55	
	O. Miscellaneous.	Demarcation stones ..	..	..	1	..	1	
	(3) Distributaries—C. Works ..	Minor Channel 0 mile 3,520 feet Left Bank.						Incomplete works of last year.
		Vent at head of Minor channel.	..	..	25	..	25	
	L. Earthwork.	Do. 330 feet Excavation and banking ..	..	..	13	..	13	
	O. Miscellaneous.	Demarcation stones ..	..	..	22	..	22	
			..	..	12	..	12	

First Application for additions and modifications of allotments, &c—*cont.*

Division.	Main and sub heads.	Names of works.	Existing grant.	Modification of allotments applied for. Reduction.	Modification of allotments applied for. Increase.	Modification of allotments proposed. Reduction.	Modification of allotments proposed. Increase.	Remarks.
			RS.	RS.	RS.	RS.	RS.	
Nellore Division—*cont.*		*Sangam Anicut System*—cont.						
		Gogulapalli Branch Channel Minor Channel 0 mile 3,960 feet Left Bank.						
	(3) Distributaries— C. Works ..	Drainage culvert 1,650 feet ..	..	..	200	..	200	In complete works of last year.
		Vent 4,500 feet right bank ..	..	..	70	..	70	
	L. Earthwork.	Excavation and banking ..	..	..	500	..	500	
	O. Miscellaneous.	Demarcation stones ..	..	..	94	..	94	
		Minor Channel $1\frac{1}{2}$ miles Right Bank.						
	(3) Distributaries— L. Earthwork.	Excavation and banking ..	..	..	8	..	8	
	O. Miscellaneous.	Demarcation stones ..	..	..	2	..	2	
		Minor Channel 1 mile 4,740 feet Left Bank.						
	(3) Distributaries— L. Earthwork.	Excavation and banking ..	..	..	1	..	1	
	O. Miscellaneous.	Demarcation stones ..	..	..	2	..	2	
	(3) Distributaries—	Ulavapalla Branch Channel.						
	L. Earthwork.	Excavation and banking ..	..	..	6	..	6	
		Minor Channel 2 miles 720 feet Right Bank.						
	(3) Distributaries— C. Works ..	Sluice 2 miles 720 feet right bank.	..	..	400	..	400	
	L. Earthwork.	Banking	..	..	305	..	305	
	O. Miscellaneous.	Demarcation stones ..	..	..	38	..	38	
		Minor Channel 3 miles 396 feet Right Bank.						
	(3) Distributaries— O. Miscellaneous.	Demarcatian stones ..	..	..	40	..	40	
		Minor Channel 3 miles 2,706 feet.						
	(3) Distributaries— L. Earthwork.	Excavation	..	..	35	..	35	
	O. Miscellaneous.	Demarcation stones ..	..	..	53	..	53	
		Minor Channel 4 miles 1,980 feet Left Bank.						
	(3) Distributaries— C. Works ..	Sluice	..	..	200	..	200	
	L. Earthwork.	Excavation	..	..	150	..	150	
	O. Miscellaneous.	Demarcation stones ..	..	..	60	..	60	
		Southern Channel.						
	(3) Distributaries— C. Works ..	Irrigation sluice 21 miles 2,970 feet left bank.	..	..	18	..	18	
		Minor Channel 0 mile 1,363 feet.						
	(3) Distributaries— L. Earthwork.	Excavation	..	..	90	..	90	
	O. Miscellaneous.	Demarcation stones ..	..	..	— 131	..	— 131	
		Branch Minor Channel 1,397 feet.						
	L. Earthwork.	Excavation	..	..	276	..	276	
	O. Miscellaneous.	Demarcation stones ..	..	..	131	..	131	
		Southern Channel Minor Channel 0 mile 1,363 feet Left Bank, Branch Minor Channel $2\frac{1}{4}$ miles.						
	(3) Distributaries— L. Earthwork.	Excavation	..	..	103	..	103	
	C. Works ..	Iron aqueduct	..	..	736	..	736	
		Duvur Branch Channel.						
	(3) Distributaries— C. Works ..	Providing screw gearing shutters.	..	..	21	..	21	
	O Miscellaneous.	Fixing demarcation stones ..	..	..	3	..	3	
		Allur Channel Minor Channel 4 miles 330 feet Right Bank.						
	(3) Distributaries— C. Works ..	Sluice 4 miles 330 feet ..	..	..	213	..	213	Newly sanctioned by the Superintending Engineer.
		Road culvert on 0 mile 1,320 feet.	..	..	360	..	360	

First Application for additions and modifications of allotments, &c.—*cont.*

Division.	Main and sub heads.	Names of works.	Existing grant.	Modification of allotments applied for.		Modification of allotments proposed.		Remarks.
				Reduction.	Increase.	Reduction.	Increase.	
Nellore Division—*cont.*		*Sangam Anicut System*—cont.	RS.	RS.	RS.	RS.	RS.	
		Allur Channel Minor Channel 4 miles 330 feet Right Bank —*cont.*						
	(3) Distributaries—C. Works ..	Vent 1,650 feet right bank ..	..	..	100	..	100	Newly sanctioned by the Superintending Engineer.
		Vent 2,310 feet left bank ..	..	..	100	..	100	
		Drop 0 mile 2,970 feet ..	..	..	70	..	70	
	L. Earthwork.	Earthwork	..	..	508	..	508	
	O. Miscellaneous.	Demarcation stones ..	..	..	55	..	55	
		Reserve for works	1,582	1,582	..	1,582	..	Reduced to provide for works above.
		Reserve for land	3,880	3,880	..	3,880	..	Not required; transfer of this to the Nellore Anicut System is proposed.
		Total ..	29,756	11,865	7,985	11,865	7,985	
		Deduct—Net reduction ..	3,880	..	..	..	..	
		Net Grant ..	25,876	..	..	..	..	

Authority Government Order.	Division.	Works.			Establishment.	Tools and Plant.	Total.	Less receipt on Capital Account.	Net grant.
		B. Land.	Other sub-heads.	Total.					
Pennér Anicut System.	Nellore Division.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.
Existing grants as per budget		500	4,472	4,972	1,028	..	6,000	..	..
As now applied for ..		— 360	3,447	3,087	793	..	3,880	..	..
Total as it will stand ..		140	7,919	8,059	1,821	..	9,880	..	..
Sangam Anicut System.									
Existing grants as per budget		20,000	9,756	29,756	2,244	..	32,000	..	..
As now applied for ..		—3,880	..	—3,880	..	..	—3,880	..	..
Total as it will stand ..		16,120	9,756	25,876	2,244	..	28,120	..	..

BEZVADA,
29th September 1890.

(Signed) J. HANNAN,
Superintending Engineer, II Circle.

ORDER—dated 10th October 1890, No. 572 I., Public Works.

The modifications of allotments proposed in the foregoing statement are sanctioned and the sum of Rs. 3,880 surrendered from the grant for the Sangam Anicut System is transferred to the Pennér Anicut System.

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
„ Superintending Engineer, II Circle.
„ Examiner, Public Works Accounts.
„ Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated October, 10th.

Recd. *Encl.*

G.O., 10th Oct. 1890, No. 572 I.

OCTOBER.

Allotments, II Circle

Sanctioning modifications of certain — and transferring to the Pennér Anicut System Rs. 3,880 surrendered from the grant for the Sangam Anicut System.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper :—

From Lieut.-Colonel A. C. SMITH, R.E., Superintending Engineer, VI Circle, to the Chief Engineer for Irrigation, dated Trichinopoly, 29th September 1890, No. 1300 T.J.

I have the honor to request that sanction may be obtained, at an early date, to the following modification of allotment :—

Item No.	—	Existing grant.	Modification of allotment applied for.		Modification of allotment proposed.	
			Reduction.	Increase.	Reduction.	Increase.
	43. MINOR WORKS AND NAVIGATION.	RS.	RS.	RS.	RS.	RS.
	IRRIGATION AND NAVIGATION.					
	WORKS FOR WHICH NEITHER CAPITAL NOR REVENUE ACCOUNTS ARE KEPT.					
	Original Works—Major.					
	Tinnevelly Division.					
1	Melapatam-Karisalkulam. Improving the — Estimate Rs. 3,090 sanctioned in G.O., No. 289 I., dated 21st May 1890 ..	..	..	1,000	..	1,000
	Minor Works.					
2	Trichinopoly division (lump sum) ..	8,350	..	1,650	..	1,650
	Total ..	..	..	2,650	..	2,650
	Repairs.					
3	Tinnevelly division (lump sum)	63,000	20,000	..	20,000	..
4	Trichinopoly division (lump sum) ..	25,000	10,000	..	10,000	..
	Total, Repairs ..	..	30,000	..	30,000	..
	AGRICULTURAL WORKS.					
	RIVER EMBANKMENTS.					
	Original Works—Major.					
	Tanjore Division.					
5	Kodamurty right bank from its head to road No. 4. Raising—. Estimate Rs. 10,626 sanctioned in G.O., No. 633 I., dated 25th October 1888	2,400	..	2,581	..	2,581
	RIVER CONSERVANCY.					
	Repairs.					
6	Tanjore division (lump sum)	20,000	..	5,000	..	5,000
7	Trichinopoly division (lump sum) ..	9,000	..	15,000	..	15,000
	Total ..	..	..	22,581	..	22,581

Item No.	—	Existing grant.	Modification of allotment applied for.		Modification of allotment proposed.	
			Reduction.	Increase.	Reduction.	Increase.
	TANK RESTORATION SCHEME.	RS.	RS.	RS.	RS.	RS.
	Original Works—Minor.					
8	Madura division (lump sum)	18,561	..	10,000	..	10,000
9	Tinnevelly division (lump sum)	3,000	..	2,000	..	2,000
	Repairs.					
10	Madura division (lump sum)	58,000	10,000	..	10,000	..
11	Tinnevelly division (lump sum)	5,422	..	2,000	..	2,000
	Total, Tank Restoration Scheme ..	..	10,000	14,000	10,000	14,000
	Grand Total, 43. Minor Works, &c. ..	..	40,000	39,231	40,000	39,231

2. *Item* 1.—It is proposed to start this work if funds are granted.

Item 2.—Sanctioned estimates in hand are in excess of the existing grant, additional fund is therefore required to work out these estimates.

Item 3.—The current year's grant has been over-estimated when the budget was prepared, and sufficient estimates have not as yet been sanctioned under repairs. Hence the necessity for the surrender.

Item 4.—Several repair estimates are to be treated as original works owing to their cost being in excess of the average revenue of the last five years; also sufficient estimates have not as yet been sanctioned; the short outlay under this head has already been explained in this office No. 659 T.C., dated 13th September 1890. Hence the necessity for surrender.

Item 5.—Additional grant is required to meet the amount of compensation paid by the Civil Department.

Item 6.—Existing grant almost spent. Additional fund is absolutely necessary to meet the demands for works in progress.

Item 7.—Sanctioned estimates in hand are far in excess of the existing grant and of the additional fund now applied for. It is very important to conserve the river margins, there being in several cases erosions. Hence further grant is applied for.

Item 8.—Of the existing grant of Rs. 18,561 a sum of Rs. 16,329 has been spent up to end of August, and more works are to be executed, for which the allotment is insufficient. Hence the necessity for an additional grant.

Items 9 *and* 11.—It is proposed to start some more works under these heads lately sanctioned, and for which the present allotment is insufficient.

Item 10.—For the last three years repairs have made better progress than original works, but as most of the repair works are now completed or nearly so, probably the full grant cannot be spent this year; hence Rs. 10,000 of the grant are proposed to be transferred to item 8.

3. I request early orders on this application in order that the additional grants may be fully utilised in time.

ORDER—dated 10th October 1890, No. 573 I., Public Works.

The demands for items 1 and 2 will be met from the amount surrendered from the grant for item 3.

2. The balance of this surrender, viz., Rs. 17,350, and Rs. 5,231 of the surrender from item 4 together with Rs. 5,194 for establishment and Rs. 339 for tools and plant charges, will be transferred to Agricultural works to meet the demands for items 5, 6 and 7.

3. The balance of the surrender from item 4, viz., Rs. 4,769, will be credited to the reserve under Irrigation and Navigation Works for which neither Capital nor Revenue Accounts are kept—Repairs.

4. The sum surrendered from the grant for item 10 will be transferred to meet the demand for item 8.

5. The balance of the reserve under Tank Restoration, Original Works, is Rs. 3,000. Rupees 2,000 of this sum will be appropriated to meet the demand for item 9 and Rs. 1,000 to meet in part the demand for item 11. There are no funds available *at present* to meet the balance of the demand for this item, but it can be again asked for if wanted later on in the year.

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, VI Circle.
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated October, 10th.

Recd. *Encl.*

G.O., 10th Oct. 1890, No. 573 I.

OCTOBER.

Allotments, VI Circle

Orders on applications for modifications of —.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper:—

From Major D. McNEIL CAMPBELL, R.E., Superintending Engineer, Periyár Project, to the Chief Engineer, Public Works Department, dated Periyár, 16th September 1890, No. 1606 P.R.

I have the honor to submit, for your approval and sanction, the enclosed estimate of Rs. 25,000 for excavating the 4th reach of the North main channel.

2. The amount sanctioned in the project book for the work in question is Rs. 8,395 and the present estimate exceeds by Rs. 16,605, which amount I request may be met from the provision for unforeseen works at your disposal.

3. The reason for the excess is fully given in the Executive Engineer's letter, No. 121 S.E., of 16th August last (a copy of which is enclosed).

ENCLOSURE.

Letter from G. P. CARLESS, Esq., Executive Engineer, No. II Periyár Division, to the Superintending Engineer, Periyár Project Works, dated Periyar, No. 121 S.E., 16th August 1890.

I have the honor to forward for sanction an estimate, amounting to Rs. 25,000, for excavating the 4th reach of the North main channel.

The original estimate was for Rs. 8,395 and the excess is due for the following reasons, viz. :—

(1) The total length of the reach is now 6,740 feet against 4,260 in the original, increasing the total amount of earthwork from 1808·905 units to 3697·740.

(2) No account seems to have been taken of the position of the reach. It lies immediately under Kuravangulam tank which derives almost a perennial supply from the Shattyar river. The land under the tank is, in fact, lower than the bed of the river; and since for supplying this tank a solid masonry dam has been built across the rocky bed of the Shattyar all the water, except in floods, is directed into the tank. The consequence is that most of the excavation had to be done in water causing increase of rates and entailing expensive drains.

(3) There seems to have been no account taken of the nature of the soil, for the lower part is a soft limestone rock and this cannot be excavated at gravel rate. The rate given for this is the same as in the other reaches, (viz.) Rs. 12 per 1,000 cubic feet; this item amounts to Rs. 6,947 and is responsible for a good deal of the excess.

Under the circumstances detailed above I beg the estimate be sanctioned.

Note by the Chief Engineer, Public Works Department.

Submitted to Government with a recommendation that the revised estimate of Rs. 25,000 be sanctioned.

(Signed) J. PENNYCUICK, Colonel, R.E.,
Chief Engineer, P.W.D.

ORDER—dated 10th October 1890, No. 574 I., Public Works.

The following revised estimate, amounting to Rs. 25,000, for excavating the 4th reach of the North main channel, Periyár Project, is sanctioned in lieu of the provision of Rs. 8,395 made for the work in the sanctioned estimate for the project, the excess of Rs. 16,605 being met from the balance of the amount reserved for unforeseen works, which will then be reduced to Rs. 48,173 :—

Capital Expenditure not charged to Revenue.
49. Irrigation.
Periyár Project.
I. Works.
(2) Main Canals and Branches.
L. Earthwork.

	RS.
Excavating the 4th Reach of the North Main Channel, estimate ...	25,000

2. This sanction has been registered as No. 69 I. of 1890-91.

(True Extract.)

(Signed) J. PENNYCUICK, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation.
" Superintending Engineer, Periyár Project, with nine enclosures.
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated October, 10th.

Recd. *Encl.*

G.O., 10th Oct. 1890, No. 574 I.

OCTOBER.

Periyar Project

Revised estimate amounting to Rs. 25,000 for excavating the 4th Reach of the North Main Channel, —, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper :—

From the Superintending Engineer, II Circle, dated 25th September 1890.

FIRST APPLICATION for additions and modifications of allotments for Irrigation Works for 1890-91.

Division.	Main and sub heads.	Names of works.	Existing grant.	Modification of allotments applied for.		Modification of allotments proposed.		Remarks.
				Reduction.	Increase.	Reduction.	Increase.	
		43. MINOR WORKS AND NAVIGATION.	RS.	RS.	RS.	RS.	RS.	
		IRRIGATION AND NAVIGATION WORKS FOR WHICH CAPITAL AND REVENUE ACCOUNTS ARE KEPT.						
Buckingham Canal.	(2) Main Canals and Branches—	*Capital.*						
	L. Earthwork.	Improvements to canal from Adyar to 8-4 miles.	20,000	8,000	..	8,000	..	Reduced to the extent of work found necessary.
		Diversion to canal from north border of Dugarázpatnam river 67 miles 2 furlongs to 72 miles 2 furlongs.	40,500	17,900	..	17,900	..	Decrease due to revised estimate lately submitted.
		Diversion to canal 89 miles ½ furlong to 89 miles 7 furlongs.	6,000	..	8,000	..	8,000	Increase due to revised estimate lately submitted.
		Pennér south diversion ..	20,260	15,030	..	15,030	..	Allotment reduced as the works are proposed to be commenced next January after completion of Patha Pennér bank.
	I. N. Works.	Flood-gate south bank of Pennér river.	20,500	17,000	..	17,000	..	
	L. Earthwork.	Constructing left flood bank to Pennér.	12,000	12,000	..	12,000	..	Work completed and allotment unnecessary.
		Pennér northern diversion through large island.	2,400	900	..	900	..	Work completed; allotment provided to meet land compensation charges.
		Diversion of canal 123 miles 6 furlongs to 126 miles 7 furlongs.	5,000	5,000	..	5,000	..	Completed; allotment unnecessary.
		Constructing a flood bank to Chippaleru river.	2,600	..	300	..	300	Applied for to complete the work.
		Improvements to canal 194 miles 7¾ furlongs to 196 miles 3 furlongs.	2,200	200	..	200	..	Reduced to the extent of the estimate.
		Improvements to canal 134 miles 3 furlongs to 150 miles 5 furlongs.	27,000	17,000	..	17,000	..	Reduced with reference to the estimate now under revision.
		Diversion of canal 151 miles to south of Manneru river.	25,690	690	..	690	..	Surrendered as the balance is considered sufficient to complete work.
		Improvements to canal from Basin to Shadayancooppam lock.	..	..	5,000	..	5,000	Applied for to commence the work for which a revised estimate has been lately submitted.

First Application for additions and modifications of allotments, &c.—*cont.*

Division.	Main and sub heads.	Names of works.	Existing grant.	Modification of allotments applied for. Reduction.	Modification of allotments applied for. Increase.	Modification of allotments proposed. Reduction.	Modification of allotments proposed. Increase.	Remarks.
			RS.	RS.	RS.	RS.	RS.	
Buckingham Canal—*cont.*	(2) Main Canals and Branches—*cont.* L. Earthwork.	*Capital*—cont. Improvements to canal 32/III to 36/III miles (Southern canal).	..	..	6,000	..	6,000	Work in progress.
		Improvements to canal diversion and flood bank at Pálár.	..	..	400	..	400	Allotment required to cover outlay; work completed.
		Improvements to canal 36-2 to 38th mile.	..	..	5,660	..	5,660	Work in progress.
		Diversion of canal from Chintamony backwater to Pulicat.	..	..	2,550	..	2,550	Allotment applied for to commence the work for which the estimate is under preparation.
		Siding basin at Puldivakam, Kalanji and Kattupally.	..	..	450	..	450	Work commenced.
		Diversion of canal from 74-2½ to 78th mile above Swarnamukhi river.	..	..	1,200	..	1,200	Work completed; allotment required to cover outlay incurred.
		Improvements and diversion to canal 44 to 65 miles 5 furlongs.	..	..	5,000	..	5,000	Revised estimate under preparation. Allotment applied for to commence work.
		Improvements to canal from 116/VII to 119/III miles.	..	..	5,000	..	5,000	These works have been commenced.
		Diversion to canal from 119-3 to 120-1 at Ramatheertham.	..	..	8,000	..	8,000	
		Improvements to canal from 120/III to 121-4½ miles.	..	..	3,000	..	3,000	
		Improvements to canal from 126-3 to 131·7 miles.	..	..	12,000	..	12,000	
		Diversion of canal 92 to 93-4 miles.	..	..	13,000	..	13,000	
		Diversion of canal 97-2 to 97-7 miles.	..	..	4,800	..	4,800	
		Constructing siding basin at Ethamukkala.	..	..	2,270	..	2,270	
	K. Buildings.	Improvements to stores and office at Kottapatam.	..	..	1,090	..	1,090	
	F. Other cross drainage works.	Constructing outlet in 118-1 mile.	..	..	3,000	..	3,000	
	L. Earthwork.	Repairing and restoring Pennér left flood bank.	..	..	7,000	..	7,000	
		Total ..	..	93,720	93,720	93,720	93,720	

25th September 1890.

(Signed) J. HANNAN,
Superintending Engineer, II Circle.

ORDER—dated 10th October 1890, No. 575 I., Public Works.

The modifications of allotments proposed by the Superintending Engineer are sanctioned.

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, II Circle.
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated October, 10th.

Recd. *Encl.*

G.O., 10th Oct. 1890, No. 575 I.

OCTOBER.

Modifications of Allotments, Buckingham Canal Division

The — proposed by the Superintending Engineer, II Circle, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.

Read—the following papers :—

Telegram from the Collector of Madura, dated 25th September 1890.

Proceedings of the Board of Revenue (Land Revenue), dated 22nd September 1890, Mis. No. 6084.

Mr. H. W. Bliss.

Read—the following letter from E. TURNER, Esq., Collector of Madura, to the Secretary to the Commissioners of Land Revenue, dated Madura, 16th September 1890, No. 378 :—

In continuation of this office letter, dated 30th August 1890, No. 360, I have the honor to submit, herewith, draft declaration and schedule of lands required for the 6th reach of the Periyár Main channel in the Madura taluk, and to request that the Board will be pleased to move the Government to publish the same in the *Fort St. George Gazette.*

2. The Deputy Collector, Madura division, may be authorised to perform the functions of a Collector under the Act and to take order for the acquisition of the lands.

Resolution—dated 22nd September 1890, Mis. No. 6084.

Submitted to Government for approval and publication.

(A true Copy and Extract.)

(Signed) H. A. SIM,
Acting Secretary.

No. 5945, Revenue.

Transferred to the Public Works Department (Irrigation Branch).

Ootacamund,
26th September 1890.

(Signed) C. A. GALTON,
Secretary to Government.

ORDER—dated 14th October 1890, No. 577 I., Public Works.

The notification will be published in the *Fort St. George Gazette.*

(True Extract.)

(Signed) J. PENNYCUICK, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Superintending Engineer, Periyár Project.
„ Chief Engineer for Irrigation.
„ Revenue Department.

IRRIGATION.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated October, 14th.

Recd. *Encl.*

G.O., 14th Oct. 1890, No. 577 I.

OCTOBER.

Lands

Ordered that the notification for the acquisition of — required for the 6th reach of the Periyár Main channel in the Madura taluk be published in the *Fort St. George Gazette.*

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.

READ—the following papers :—

Proceedings of the Board of Revenue (Land Revenue), dated 12th September 1890, Mis. No. 5860.

MR. H. W. BLISS.

Read—the following papers :—

From E. TURNER, Esq., Collector of Madura, to the Secretary to the Commissioners of Land Revenue, dated Madura, 26th August 1890, No. 349.

In continuation of this office letter, dated 16th August 1890, No. 337, I have the honor to submit, herewith, draft declaration and schedule of lands required for the Periyár Main and Branch channels, &c., in the Madura taluk, and to request that the Board will be pleased to move the Government to publish the same in the *Fort St. George Gazette.*

2. The Deputy Collector, Madura division, may be authorized to perform the functions of a Collector under the Act and to take order for the acquisition of the lands.

From the same Officer, dated Madura, 30th August 1890, No. 360.

In continuation of this office letter, dated 26th August 1890, No. 349, I have the honor to submit, herewith, draft declaration and schedule of lands required for the Periyár fourth Branch channel and for the fifth and sixth reaches of the Main channel in the Madura taluk, and to request that the Board will be pleased to move the Government to publish the same in the *Fort St. George Gazette.*

2. The Deputy Collector, Madura division, may be authorised to perform the functions of a Collector under the Act and to take order for the acquisition of the lands.

Resolution—dated 12th September 1890, Mis. No. 5860.

Submitted to Government for approval and publication.

(A true Copy and Extract.)

(Signed) H. A. SIM,
Acting Secretary.

No. 5900, Revenue.

Transferred to the Public Works Department (Irrigation Branch).

(Signed) C. A. GALTON,
Secretary to Government.

OOTACAMUND,
24th September 1890.

ORDER—dated 14th October 1890, No. 578 I., Public Works.

The notifications will be published in the *Fort St. George Gazette*.

(True Extract.)

(Signed) J. PENNYCUICK, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Superintending Engineer, Periyár Project..
,, Chief Engineer for Irrigation.
,, Revenue Department.

IRRIGATION.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated October, 14th.

Recd. *Encl.*

G.O., 14th Oct. 1890, No. 578 I.

OCTOBER.

Lands

Ordered that the notification for the acquisition of — required for the Periyár Main and Branch channels in Madura taluk be published in the *Fort St. George Gazette.*

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper:—

From J. HANNAN, Esq., Superintending Engineer, II Circle, to the Chief Engineer for Irrigation, dated Bezváda, 17th September 1890, No. 157 B.C.

I have the honor to forward herewith, for your approval and sanction of Government, statements of floating plant in the Buckingham Canal division for the year 1891-92.

2. The probable cost of upkeep is estimated at Rs. 910.

3. The Executive Engineer has been directed to attend in future years to the instructions given in G.O., No. 606 I. of 5th December 1889.

ENCLOSURES.

DETAILED approximate estimate of the annual cost of manufacture of the Irrigation Floating Plant, Buckingham Canal Division.

Particulars.	Staff boat, 1st class, No. 4.	Staff boats, 2nd class, Nos. 3, 5 and 6.	Travelling boats, Nos. 7 and 8.	Punt with wooden ribs, No. 7.	Punts Nos. 2, 6, 8 and 9.	Remarks.
	RS.	RS.	RS.	RS.	RS.	
Docking and launching	10	7	10	25	25	
Caulking	15	10	10	30	30	
Painting	30	20	18	..	..	
Ropes, &c.	5	5	5	10	10	
Dammering	20	15	..	10	10	
Sundry repairs	20	13	7	25	25	
Total ..	100	70	50	100	100	

MADRAS BASIN,
4th September 1890.

(Signed) O. V. BODDY, Major, R.E.,
Executive Engineer, Buckingham Canal Division.

(Signed) J. HANNAN,
Superintending Engineer, II Circle.

ABSTRACT showing the comparison of details between the estimated maintenance cost of Floating Plant in the Buckingham Canal Division for 1890-91 and 1891-92.

—	Number.		Original value.		Book value.		Cost of upkeep.	
	1891-92.	1890-91.	1891-92.	1890-91.	1891-92.	1890-91.	1891-92.	1890-91.
1	2	3	4	5	6	7	8	9
			RS.	RS.	RS.	RS.	RS.	RS.
Staff boat, 1st class, No. 4	1	1	1,408	1,408	705	822	100	100
Staff boats, 2nd class, Nos. 3, 5 and 6.	3	3	2,575	2,575	1,254	1,468	210	300
Travelling boats, Nos. 7 and 8 ..	2	..	1,400	..	1,284	..	100	..
Punt No. 7	1	1	1,870	1,870	748	935	100	130
Punts Nos. 2, 6, 8 and 9	4	4	7,856	7,856	5,504	6,288	400	520
Total ..	11	9	15,109	13,709	9,495	9,513	910	1,050

MADRAS BASIN,
2nd September 1890.

(Signed) O. V. BODDY, Major, R.E.,
Executive Engineer, Buckingham Canal Division.

(Signed) J. HANNAN,
Superintending Engineer, II Circle.

No. 143 I.

Submitted to Government. Particulars inserted in columns 3 to 8 inclusive appertaining to the floating plant constructed prior to 1889 have been struck out from the Superintending Engineer's statement in accordance with G.O., No. 606 I., dated 5th December 1889.

CHEPÂK,
6th October 1890.

(Signed) G. T. WALCH,
Chief Engineer for Irrigation.

To the Joint Secretary to Government,
Public Works Department, Irrigation Branch.

ORDER—dated 16th October 1890, No. 579 I., Public Works.

The estimate of the cost of upkeep of the floating plant belonging to the Buckingham canal is approved; Rs. 910 will be provided on this account in the budget estimates for "Minor Works and Navigation" for 1890-91.

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
,, Superintending Engineer, II Circle.
,, Examiner, Public Works Accounts.

IRRIGATION.
ACCOUNT.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated October, 16th.

Recd. *Encl.*

G.O., 16th Oct. 1890, Nos. 579 I.

OCTOBER.

Floating Plant

Estimate of the cost of upkeep of the — of the Buckingham canal for 1891-92, approved.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following papers:—

From J. W. MARTIN, Esq., Superintending Engineer, I Circle, to the Chief Engineer for Irrigation, dated Dowlaishweram, 3rd September 1890, No. 1155 G.D.

I have the honor to submit herewith the usual annual statements connected with the working of staff boats in the Godávari district for the official year 1889-90.

2. Statement B giving details of rents realized for each boat is not submitted—*vide* G.O., No. 606 I., dated the 5th December 1889.

3. The actual amount at credit of each existing boat and the amount required as laid down in G.O., No. 662 I. of the 26th August 1878 are as shown below:—

Number.	Original cost.	Actual at credit.	Required.
	RS.	RS.	RS.
11	1,780	1,489	1,630
12	820	456	751
13	820	431	683
14	1,400	1,413	1,050
15	800	410	600
16	1,250	1,029	729
17	850	818	496
18	1,400	1,115	700
19	850	557	425
20	1,400	393	467
21	840	303	280
22	1,783	125	148
Total ...	13,993	8,539	7,959

4. No staff boats were sold during the year and no new boats were constructed.

5. The total receipts during the year were Rs. 2,066-1-9 and the total expenditure Rs. 1,647-5-4.

ENCLOSURES.

A-I.—STATEMENT showing the Staff Boats sold in the Godávari District, I Circle, for the official year 1889-90.

Boats sold.	Surplus.	Deficit.	Amount reserved for repairs.	Remarks.
			RS. A. P.	
Total brought forward from statement A-I., printed with G.O., No. 303 I., dated the 25th June 1889	...	...	8,840 11 11	
Boats sold in 1889-90	...	...	...	
Total balance available for repairs and constructions	...	...	8,840 11 11	

DOWLAISHWERAM,
3rd September 1890.

(Signed) J. W. MARTIN,
Superintending Engineer, I Circle.

A.—Statement showing the date of completion, earnings and of Staff Boats constructed, purchased in the Godávari District, Eastern Division, I Circle, for the official year 1889-90.

Boat number.	Class of boat.	Date of completion or purchase or cost.		Monthly rent.	Amount recovered up to end of March 1890 (actual collections).	Amount spent on repairs up to end of March 1890.	Amount reserved for repairs and reconstruction up to end of March 1890.	Remarks.
		Year.	Amount.					
1	2	3	4	5	6	7	8	9
			RS.	RS.	RS. A. P.	RS. A. P.	RS. A. P.	
11	Staff boat, 1st class.	1878-79	1,780	30	3,448 3 11	1,959 11 7	1,488 8 4	The recovery up to end of March 1889 on boat No. 21 should be Rs. 607-2-11 and not Rs. 610-12-6 as stated by the Examiner, Public Works Accounts (para. 2 of Chief Engineer for Irrigation's No. 64 I. of 20th June 1889, printed with G.O., No. 303 I. of 25th June 1889). The mistake arose in 1887-88 as the amount recovered to end of that year was entered as Rs. 460-6-5 instead of Rs. 456-12-10 (G.O., No. 700 I. of 23rd November 1888). This was explained to the Examiner, Public Works Accounts, in N.B. on monthly return of staff boats for April 1889.
12	Do. 2nd ,,	1878-79	820	12 / 16	1,402 3 10	946 7 6	455 12 4	
13	Do. 2nd ,,	1879-80	820	12 / 16	1,304 15 1	874 0 3	430 14 10	
14	Do. 1st ,,	1880-81	1,400	24	2,694 0 5	1,280 12 3	1,413 4 2	
15	Do. 2nd ,,	1880-81	800	12 / 16	1,095 13 2	685 12 10	410 0 4	
16	Do. 1st ,,	1882-83	1,250	24	1,817 5 8	788 2 1	1,029 3 7	
17	Do. 2nd ,,	1882-83	850	12 / 16	1,181 8 11	363 13 8	817 11 3	
18	Do. 1st ,,	1883-84	1,400	24	1,696 3 3	581 1 3	1,115 2 0	
19	Do. 2nd ,,	1883-84	850	12 / 16	934 5 5	377 2 11	557 2 6	
20	Do. 1st ,,	1885-86	1,400	24	1,049 7 7	656 11 9	392 11 10	
21	Do. 2nd ,,	1885-86	840	12 / 16	752 10 9	449 3 4	303 7 5	
22	Do. 1st ,,	1888-89	1,783	30	221 1 2	96 3 4	124 13 10	
	Total ..	..	..	..	17,597 15 2	9,059 2 9	8,538 12 5	

Rent for 2nd-class staff boats is charged at only Rs. 12 per month to subordinates drawing less than Rs. 200 per mensem—see para. 1047-A. of Public Works Code.

Dowlaishweram,
19th August 1890.

(Signed) C. M. SMITH,
Executive Engineer, Eastern Division, Godávari.

(Signed) J. W. MARTIN,
Superintending Engineer, I Circle.

Office note to the Examiner, Public Works Accounts, dated 16th September 1890, No. 179.
Office note from the Examiner, Public Works Accounts, dated 22nd September 1890, No. 5641.

No. 142 I.

Submitted to Government.

2. The earnings realized by the twelve staff boats of the Godávari delta up to the end of the past official year amounted to Rs. 17,597-15-2 and the charges incurred for the same period to Rs. 9,059-2-9. The amount available for repairs to existing boats and for the construction of new ones is Rs. 8,538-12-5 or Rs. 580 more than the amount calculated according to the standard laid down in Proceedings of the Madras Government, No. 662 I., dated 26th August 1878.

Chepâk,
6th October 1890.

(Signed) G. T. WALCH,
Chief Engineer for Irrigation.

To the Joint Secretary to Government,
Public Works Department, Irrigation Branch.

ORDER—dated 16th October 1890, No. 580 I., Public Works.

Recorded with the remark that the financial results for 1889-90 of the staff boats of the Godávari delta are satisfactory.

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
,, Superintending Engineer, I Circle.
,, Examiner, Public Works Accounts.
,, Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated October, 16th.

Recd. *Encl.*

G.O., 16th Oct. 1890, No. 580 I.

OCTOBER.

Staff Boats, Godavari District

Statements showing the working of the — for 1889-90, recorded with remarks.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper :—

From J. W. MARTIN, Esq., Superintending Engineer, I Circle, to the Chief Engineer for Irrigation, dated Nallacherla, 14th September 1890, No. 1229 G.D.

I have the honor to submit, herewith, an application for modification of allotments in the Godávari Western division, and to request that the same may be sanctioned for the reasons entered in the application. I think it is advisable to reserve the amount surrendered under Capital Account in view to its being transferred to the new lock at Vijeshwaram, the estimate for which is likely to be sanctioned shortly.

ENCLOSURE.

APPLICATION for additional or modification of allotments in the I Circle.

Financial Budget and Departmental heads, &c.	Works.	Existing grant for current year.	Proposed		Sanctioned		Remarks.
			Increase.	Reduction.	Increase.	Reduction.	
	GODAVARI WESTERN DIVISION.	RS.	RS.	RS.	RS.	RS.	
	49. CAPITAL EXPENDITURE ON PUBLIC WORKS NOT CHARGED AGAINST REVENUE.						
	Gunnaram Canal.						
3. Distributaries— C. Works ..	Minor masonry works ..	800	..	200	..	200	Grant surrendered with reference to Irrigation Chief Engineer's No. I-86 G.D., of 23rd July 1890.
	Bank Canal.						
3. Distributaries— C. Works ..	Minor masonry works ..	1,500	..	900	..	900	
	Amalápur Canal.						
3. Distributaries— C. Works ..	Minor masonry works ..	1,500	..	300	..	300	
L. Earthwork.	Minor channels ..	2,000	..	900	..	900	
	Bendamurlanka Canal.						
3. Distributaries— C. Works ..	Minor masonry works ..	5,000	..	3,900	..	3,900	
L. Earthwork.	Minor channels ..	1,000	..	1,000	..	1,000	
	Reserve	3,895	..	3,500	..	..	
	Total ..	..	..	10,700	..	7,200	
	Tank Restoration Works.						
	Original works ..	8,000	..	5,000	..	..	Very few Original works have been found necessary contrary to last year's expectation; hence the reason for surrender and partly transfer to repairs.
	Repairs	6,000	2,000	..	..	..	

ORDER—dated 16th October 1890, No. 581 I., Public Works.

The reserve of Rs. 3,895 for expenditure on the Godávari delta works under 49. Irrigation has already in G.O., No. 544/A I., dated 26th September 1890, been reappropriated to meet in part the demand for constructing a barge for Priestman's dredger. The remaining surrenders under 49. Irrigation aggregate Rs. 7,200, or Rs. 8,856 including establishment charges. Of this amount Rs. 209 will be appropriated to meet the balance of the amount required for expenditure this year in constructing the barge, and Rs. 8,647 will be reserved to meet the probable expenditure in England on account of the Priestman's dredger required for the delta, for which a special indent will shortly be submitted to the Secretary of State.

2. The amount of Rs. 20,000 required for expenditure this year on the Vijeshwaram lock is less than the share of the cost of the lock chargeable to the Revenue Account of the delta, and will be included in the next application for additional funds under 42. Major Works (Working Expenses) to be submitted to the Government of India.

3. Of the amount of Rs. 5,000 surrendered from the Tank Restoration grant under Original Works, Rs. 2,000 will be transferred to meet the demand under Repairs, and the balance of Rs. 3,000 will be kept in reserve to meet future demands for Tank Restoration works in other divisions.

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, I Circle.
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated October, 16*th*.

Recd. *Encl.*

G.O., 16th Oct. 1890, No. 581 I.

OCTOBER.

Modification of Allotments

Passing orders on application of the Superintending Engineer, I Circle, for — in the Godávari Western division.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.

READ—the following paper :—

From Lieut.-Colonel A. C. SMITH, R.E., Superintending Engineer, VI Circle, to the Chief Engineer for Irrigation, dated Trichinopoly, 24th September 1890, No. 596 T.N.

Under para. 1339 of the Public Works Code, I have the honor to request sanction of Government for execution, by this department, of the contribution work of repairing the Marandai channel taken off the Chittár river in Tenkási taluk of the Tinnevelly district.

2. The channel is 17 miles long and ends in Marandai-Periyakulam tank, an Imperial one ; it supplies 11 of the Inam and Uthumalai Zemindari tanks and 5 of Government, of which 4 are minor tanks. It has 1,640 acres under tanks and direct channel irrigation, of which 512 acres are Government, 206 Inam, and 922 belong to Uthumalai Zemindari.

3. The estimate provides for clearing silt from the 8th mile 3,260 feet to 13th mile 1,220 feet, repairing and reconstructing the sluices and repairing the anicut and weir No. 1.

4. The inamdar having refused to pay his contribution under the plea that "he has effected some repairs to the channel without any assistance from Government" and that "he did not make any request for the present improvement" and he is to bear no share of the cost of the proposed repairs, and the repairs to sluices, which exclusively benefit the zemindar, have been omitted from the estimate as requested by the Collector in his No. 221, dated 1st September 1890.

5. The zemindar of Uthumalai has agreed to pay his contribution, viz., Rs. 2,463, including the centage for Public Works Department supervision and tools and plant in three instalments, viz., first instalment before the commencement of the work and the other two at 6 months' intervals. This proposal has met with the approval of the Collector, and I have asked him to collect the amount accordingly. The cost to be borne by Government is Rs. 1,056.

6. The estimate has been approved by the Collector and it will be sanctioned by me on receipt of the sanction now applied for.

ORDER—dated 16th October 1890, No. 582 I., Public Works.

The execution, by this department, of the works referred to is sanctioned.

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, VI Circle.
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated October, 16th.

Recd. *Encl.*

G.O., 16th Oct. 1890, No. 582 I.

OCTOBER.

Marandai Channel, Tinnevelly District

The execution of the repairs to the — by the Public Works Department, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following paper :—

From Lieutenant-Colonel R. R. E. DRAKE-BROCKMAN, R.E., Superintending Engineer, IV Circle, to the Chief Engineer for Irrigation, dated Coimbatore, 22nd September 1890, No. 90 E.I.

With reference to para. 4 of G.O., No. 351 I., of 24th June last, I have the honor to forward a revised estimate, amounting to Rs. 2,690, for constructing 19 masonry falls on distributaries from Barur tank, which is less by Rs. 1,880 than the original estimate sanctioned in G.O., No. 748 I., of 1st September 1885.

2. In the general abstract of the estimates quantities and cost of the masonry falls that have been completed are shown in a lump sum, and for those still remaining to be constructed detailed estimates are now submitted.

Order—dated 16th October 1890, No. 583 I., Public Works.

The following revised estimate, amounting to Rs. 2,690, for constructing 19 masonry falls on distributaries, Barur tank project, is sanctioned in lieu of the provision of Rs. 4,570 which was made for them in the classified abstract estimate printed with G.O., No. 748 I., dated 1st September 1885, and was subsequently reduced by Rs. 1,154 in G.O., No. 351 I., dated 24th June 1890, the net saving of Rs. 726 effected by the present estimate being reserved for unforeseen works :—

Capital Expenditure not charged to Revenue.
49. Irrigation.
Barur Tank Project.
I. Works.
(3) Distributaries.
C. Works.

	RS.
Constructing 19 masonry falls, estimate	2,690

2. This sanction has been registered as No. 71 I. of 1890-91.

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
„ Superintending Engineer, IV Circle, with ten enclosures.
„ Examiner, Public Works Accounts.
„ Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated October, 16th.

Recd. *Encl.*

G.O., 16th Oct. 1890, No. 583 I.

OCTOBER.

Barur Tank Project

Revised estimate, amounting to Rs. 2,690, for constructing 19 masonry falls on distributaries —, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following paper:—

From J. HANNAN, Esq., Superintending Engineer, II Circle, to the Chief Engineer for Irrigation, dated Bezváda, 20th September 1890, No. 369 N.C.

With reference to your memorandum No. II/52 N.L. of the 8th instant, I have the honor to state that the crest of surplus weir has been placed 1 foot below F.T.L., and that the weir is furnished with shutters 1 foot high.

Enclosure.

Report to accompany the Plans and Estimates for the Turimerla Tank improvements.

	RS.
Amount of estimate	5,130
Date of last repairs	Not known.
Cost of do.	

[*Note.*—In the list of Imperial tanks the name of the tank has been misprinted as "Purimerla" instead of Turimerla, No. 130.]

The accompanying estimates provide for the improvements of the Turimerla tank bund and for a new surplus weir and for the remodelling of the existing sluices.

The tank bund on the inner side is much eroded and gullied, and it is proposed to bring it up to proper section everywhere, to revet the exposed part of the tank, and to turf those parts which need protection from the action of the water. The revetment will be backed with gravel 1 foot in thickness.

The surplus water of the tank at present discharges over a masonry escape 48 feet long at its northern end and a ground escape at its southern end. This masonry escape is in a ruinous condition and beyond repair.

The surplus water passes in rear of the bund and is scouring the rear toe.

The ground escape is to be closed for the proper regulation of water, and it is therefore proposed to build a new weir which has been placed at right angles to axis of the surplus channel.

Nellore,
16th June 1890.

(Signed) H. O'CONNELL,
Executive Engineer, Nellore Division.

ORDER—dated 16th October 1890, No. 584 I., Public Works.

The following estimate is sanctioned :—

Irrigation.
43. Minor Works and Navigation.
Irrigation and Navigation
Works for which neither Capital nor Revenue Accounts are kept.
Nellore Division.
Original Works.

	RS.
Improvements to Turimerla tank, No. 130 of list of "Imperial Works," estimate	5,130

2. This sanction has been registered as No. 72 I. of 1890-91.

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, II Circle, with eight enclosures.
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated October, 16th.

Recd. *Encl.*

G.O., 16th Oct. 1890, No. 584 I.

OCTOBER.

Turimerla Tank, Nellore Division

Estimate of Rs. 5,130 for improvements to —, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper :—

From J. HANNAN, Esq., Superintending Engineer, II Circle, to the Chief Engineer for Irrigation, dated Bezváda, 17th September 1890, No. 1557 K.S.

I have the honor to submit an estimate, amounting to Rs. 10,243, for raising the right bank of the Bank canal, Western delta, above Mortota lock to 3 feet + still water in accordance with instructions contained in your No. II/23 K.S. of 10th February 1890.

2. Two estimates for raising this bank were already sanctioned, one in 1887-88 and the other in 1889-90. The former to hold up water to get materials down for building lock weir and the latter to bring bund up to 3 + F.S.L. As it is all one work, the amounts of these two estimates are included in the revised estimate now submitted and the two original sanctions cancelled.

3. Rupees 8,000 of the amount of this estimate can be met from the provision of Rs. 8,000 for raising banks above locks, item 892 in the revised statement of estimates printed with G.O., No. 577 I., dated 1st October 1888, and the balance from the provision for unforeseen works.

ENCLOSURE.

REPORT to accompany the Revised Estimate for raising the Right Bank of the Bank Canal above Mortota Lock Weir.

The Chief Engineer for Irrigation in his No. B./K.S., forwarded with Superintending Engineer's No. 2408 K.S. of 14th February 1890, orders the right bank of the canal from the new Mortota lock to above Voleru should at once be raised to what is required to fit it for the "still water" level proposed in the reach, and this will make it sufficiently high to act as a flood bank in case the existing one on the left side of the canal goes.

2. The bank to be constructed with a top breadth of 6 feet and a level of + 20 * (datum 43 feet below crest of anicut).

* Still water level being 16·83. This gives 4½ feet on lower sill of lock above—*i.e.*, Vellatur lock.
23rd August 1890. (Intld.) J. H.

3. The raising of the river flood bank that has to be done according to the project estimate is shown in pencil for this provision is made in the estimate (2) L. Bank Canal improvements, Rs. 1,13,715. The only work towards the raising of this bank that could be done last closure was the raising of a furlong or so above Mortota lock.

(Signed) J. E. PAUL,
Executive Engr., Kistna Western Divn.

The work is three-fourths complete. There has been unnecessary delay in submitting this estimate.

(Intld.) J. H.

4th September 1890.

No. 144 I.

Submitted to Government. The estimate as slightly reduced in this office amounts to Rs. 10,200 and is recommended for sanction.

CHEPÂK, (Signed) G. T. WALCH,
6th October 1890. Chief Engineer for Irrigation.

To the Joint Secretary to Government,
Public Works Department, Irrigation Branch.

ORDER—dated 16th October 1890, No. 586 I., Public Works.

The following estimate, amounting to Rs. 10,200, for raising the right bank of the Bank canal, Kistna Western delta, above Mortota lock, is sanctioned, Rs. 8,000 of the amount required to cover the proposed outlay being met from the provision to that extent made under (2) Main Canals and Branches, I. Navigation Works, in the classified abstract estimate printed in Proceedings of the Madras Government, No. 577 I., dated 1st October 1888, *vide* item 892 for "Raising banks above locks to hold up water for navigation," and the balance, viz., Rs. 2,200, from the amount reserved for unforeseen works of the Kistna delta system, which will then be reduced to Rs. 2,17,936 :—

Capital Expenditure not charged to Revenue.
49. Irrigation.
Kistna Delta System.
Western Section.
I. Works.
Bank Canal.
(2) Main Canals and Branches.
L. Earthwork.

	RS.
Raising right bank above Mortota lock, estimate	10,200

2. This sanction has been registered as No. 73 I. of 1890-91.

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, II Circle, with two enclosures.
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated October, 16th.

Recd. *Encl.*

G.O., 16th Oct. 1890, No. 586 I.

OCTOBER.

Raising the Right Bank of the Bank Canal

Estimate amounting to Rs. 10,200 for —, Kistna Western delta, above Mortota lock, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper :—

From J. C. JOHNSTON, Esq., Executive Engineer, Kurnool Division, to the Superintending Engineer, III Circle, dated 17th September 1890, No. 227.

I have the honor to submit an estimate for constructing four Pulicat boats for the use of subordinates on the Kurnool canal for early sanction.

ENCLOSURE.

Report to accompany estimate for four Pulicat boats.

There are four upper subordinates in charge of the six sections of the canal, and they are greatly hampered in their work by the sheer impossibility of getting their luggage conveyed in carts from place to place during the monsoons.

They each require a small boat for the purpose of taking their luggage about. The boats proposed to be purchased are not expensive and are quite large enough.

No. 1828.

Submitted to the Chief Engineer for Irrigation for favor of sanction.

BELLARY,
20th November 1890.

(Signed) H. SMALLEY, Col., R.E.,
Superintending Engineer, III Circle.

ORDER—dated 16th October 1890, No. 587 I., Public Works.

The estimate, amounting to Rs. 600, for four "Pulicat boats" required for the use of upper subordinates employed on the Kurnool-Cuddapah canal, is sanctioned with the provisos that—

(1) Only two of the boats be obtained at first and the purchase of the other two be deferred until it is seen that those obtained answer the purpose for which they are intended.

(2) The rent shall be Rs. 8 per mensem and the subordinates using boats shall be expected to hire them continuously during the season that the canal is open for navigation.

(3) Each hirer shall keep a man always in charge of the boat.

2. This sanction has been registered as No. 70 I. of 1890-91, and classified as shown below :—

Irrigation.
42. Major Works.
(Working Expenses.)
Kurnool-Cuddapah Canal.
III. Tools and Plant.
9. Navigation Plant.
Floating Plant.

	RS.
Constructing four, Pulicat boats, estimate	600

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, III Circle, with one estimate.
" Examiner, Public Works Accounts.

IRRIGATION.
ACCOUNT.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated October, 16*th*.

Recd. *Encl.*

G.O., 16th Oct. 1890, No. 587 I.

OCTOBER.

"Pulicat Boats"

Estimate of Rs. 600 for constructing four — for the use of the upper subordinates employed on the Kurnool-Cuddapah canal, sanctioned with remarks.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following paper :—

From G. D. WYBROW, Esq., Superintending Engineer, I Circle, to the Chief Engineer for Irrigation, dated Dowlaishweram, 23rd September 1890, No. 1274 G.D.

With reference to para. 3 of your memorandum, No. I/37 G.D., dated 27th March 1890, and in continuation of my letter, No. 479 G.D., dated 16th June 1890, I have the honor to inform you that the cotton machine therein referred to was sold by public auction for Rs. 15-12-0 against the book value of Rs. 308-2-6, and to request that you will be so good as to obtain the sanction of Government for the difference (Rs. 292-6-6) being written off the books in the Godávari Eastern division by credit to stock and debit to Provincial revenue, to which head a profit of Rs. 2,013-10-2 was credited under the authority conveyed in G.O., No. 629 I., dated 17th December 1889.

Order—dated 16th October 1890, No. 588 I., Public Works.

Sanctioned accordingly.

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
„ Superintending Engineer, I Circle.
„ Examiner, Public Works Accounts.

IRRIGATION.
ACCOUNT.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated October, 16th.

Recd. *Encl.*

G.O., 16th Oct. 1890, No. 588 I.

OCTOBER.

Cotton Machine at the Dowlaishweram Workshops

The proposal of the Superintending Engineer, I Circle, to write off the books the difference between the book value and the sum realised by the sale of the —, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.

READ—the following paper :—

From Major O. V. BODDY, R.E., Executive Engineer, Buckingham Canal Division, to the Superintending Engineer, II Circle, dated Madras Basin, 17th September 1890, No. 818.

I have the honor to request sanction for sale by public auction of 2nd-class Staff boat No. 1 which has been rendered unserviceable as already explained in this office No. 1648, dated 19th December 1889. This boat was constructed in 1881 at a cost of Rs. 884 and since then has undergone repairs to the extent of Rs. 446-8-5; her earnings up to date has been Rs. 974-8-5.

No. 173 B.C.

Submitted to the Chief Engineer for Irrigation, who is requested to be good enough to obtain the sanction of Government for sale by public auction of Staff boat No. 1 above referred to.

2. The circumstances under which the boat was rendered unserviceable were explained in this office No. 323 B.C., dated 10th January 1890, in reply to his memo. No. 78 B.C., dated 6th December 1889.

2nd October 1890.

(Signed) J. HANNAN,
Superintending Engineer, II Circle.

ORDER—dated 17th October 1890, No. 589 I., Public Works.

The Superintending Engineer, II Circle, is authorized to sell by public auction 2nd-class Staff boat No. 1, which is reported to be unserviceable.

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, II Circle.
" Examiner, Public Works Accounts.

IRRIGATION.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated October, 17th.

Recd. *Encl.*

G.O., 17th Oct. 1890, No 589 I.

OCTOBER.

Staff Boat

Authorising the sale of 2nd-class—No. 1 of the Buckingham Canal division.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following paper:—

From J. W. MARTIN, Esq., Superintending Engineer, I Circle, to the Chief Engineer for Irrigation, dated Dowlaishweram, 28th August 1890, No. 1109 G.D.

I have the honor to submit herewith the usual annual statements, parts I and II, together with the abstract for the Irrigation floating plant, for the next official year 1891-92.

2. In the preparation of these statements the orders issued in G.O., No. 606 I., dated the 5th December 1889, have been attended to.

3. The following boats have been sold under the orders of Government as entered against each and so they have been omitted from these statements :—

Wooden light boat No. 78—G.O., No. 691 I., dated 7th November 1887.
Iron deep boat No. 42, }
Do. do. ,, 102, } G.O., No. 272 I., dated 14th May 1890.
Do. B. Barge, }

4. Wooden hand dredge has also been removed from the statements, as it has been ordered in G.O., No. 272 I., dated 14th May 1890, that she should be divided into two parts, each part to be used as a ferry ballakat.

5. The amount shown as cost of upkeep for 1891-92 is Rs. 22,587, but these figures are only rough approximations. The Executive Engineer, Godávari Eastern Division, reports that the salaries of the crew and the cost of small stores, &c., amounting to Rs. 3,036, though included in the statements under cost of maintenance are met from the earnings of steamers and are therefore never charged to tools and plant. This will be kept in view in applying for funds under tools and plant in the budget estimate for next year.

6. The original values of 1st-class staff boats Nos. 11 and 14 have been corrected from Rs. 1,845 and Rs. 1,430 to Rs. 1,780 and Rs. 1,400 respectively so as to correspond with the values shown in the staff boat returns.

Enclosures.

Return No. 27.—Statement of the Irrigation Floating Plant in the Godávari District showing the estimated cost of upkeep during the year 1891-92.

Part I.—Steamers and Steam Dredgers.

Registered number.	Details of Plant.		Value of Plant.		Probable cost of upkeep in 1891-92.	Remarks.
	Description.	Name of Steamers, &c.	Original.	Present book value.		
1	2	3	4	5	6	7
		Irrigation.	RS.	RS.	RS.	
..	Steamer ..	"Shamrock"	20,014	7,688	1,310	Under repairs. New boilers have to be fitted.
..	Do. ..	"Arthur Cotton"	9,535	7,459	850	
..	Do. ..	"Victoria"	50,956	27,758	2,300	In good working order.
..	Steam Tug	"John Mullins"	31,000	27,900	1,650	Do. do.
		Total ..	..	..	6,110	

Part I.—Steamers and Steam Dredgers—cont.

Registered number.	Details of Plant.		Value of Plant.		Probable cost of upkeep in 1891-92	Remarks.
	Description.	Name of Steamers, &c.	Original.	Present book value.		
1	2	3	4	5	6	7
		Irrigation—cont.	RS.	RS.	RS.	
1	Dredger ..	Canal iron dredger, double bucket, ladder side delivery.	26,373	4,514	..	Since condemned.
2	Do. ..	Canal iron dredger, single bucket, ladder end delivery.	15,395	1,323	460	In working order.
3	Do. ..	Canal iron dredger, single bucket, ladder side delivery.	30,437	5,443	460	
4	Do. ..	Do. do. ..	30,437	5,560	460	
5	Do. ..	Do. do. ..	30,437	4,840	460	
6	Do. ..	Do. do. ..	31,097	8,242	460	
..	Do. ..	Priestman's, size B	16,580	8,034	460	
..	Do. ..	Do. „ A	13,438	11,423	460	
		Total ..	..	..	3,220	
		Grand Total ..	..	..	9,330	

Rules for finding present book value.

1. Steamers to be reduced 10 per cent. every year and the amount of special repairs, if any, must be added thereto.

2. Steam dredgers to be reduced 15 per cent. every year and the amount of special repairs, if any, must be added thereto.

4th August 1890.

(Signed) J. INGLIS, Assistant Engineer.

(Signed) W. JONES, Boat Superintendent.

(Signed) C. M. SMITH, Executive Eng., Godávari Eastern Divn.

(Signed) J. W. MARTIN, Superintending Engineer, I Circle.

Return No. 27.—Statement of the Irrigation Floating Plant in the Godávari District showing the estimated cost of upkeep during the year 1891-92.

Part II.—Barges, Boats and Punts.

Registered number.	Details of Plant.	Value of Plant.		Probable cost of upkeep in 1891-92.	Remarks.
	Description of Boats.	Original.	Present book value.		
1	2	3	4	5	6
	Irrigation.	RS.	RS.	RS.	
1	Iron flat	6,243	1,645	140	Under repairs.
2	Canal iron punt	2,812	1,550	120	
3	Do.	2,811	1,170	120	In working order.
4	Do.	2,811	1,606	120	
5	Do.	2,812	1,074	120	Under repairs.
6	Do.	2,812	1,845	120	
7	Do.	2,812	1,471	120	In working order.
8	Do.	2,812	1,413	120	
9	Do.	2,812	1,482	120	In good working order; lately repaired.
10	Do.	2,812	1,517	120	
11	Do.	2,812	1,571	120	In working order.
13	Iron dredge punt	2,310	867	75	
14	Canal iron punt	2,811	1,418	120	Under repairs.
15	Do.	2,812	1,679	120	In good working order; lately repaired.
16	Do.	2,812	1,844	120	
17	Do.	2,812	1,441	120	In working order.
18	Iron dredge punt	2,310	653	75	
19	Canal iron punt	2,812	1,209	120	In good working order; lately repaired.
20	Do.	2,812	1,383	120	

Part II.—Barges, Boats and Punts—cont.

Registered number.	DETAILS OF PLANT. Description of Boats.	VALUE OF PLANT Original.	VALUE OF PLANT Present book value.	Probable cost of upkeep in 1891-92.	Remarks.
1	2	3	4	5	6
	Irrigation—cont.	RS.	RS.	RS.	
21	Iron dredge punt	2,310	538	75	
22	Do.	2,310	775	75	In working order.
23	Canal iron punt	2,812	1,139	120	
24	Do.	2,812	1,572	120	In good working order; lately repaired.
25	Do.	2,811	1,241	120	In working order.
26	Do.	2,811	1,702	120	In good working order; lately repaired.
27	Do.	2,811	1,329	120	
28	Do.	2,811	1,903	120	In working order.
29	Do.	2,811	1,089	120	
30	Do.	2,811	1,143	120	
31	Do.	2,811	1,401	120	In good working order; lately repaired.
32	Do.	2,811	1,485	120	
33	Do.	2,811	1,560	120	
34	Iron flat	4,693	2,037	130	In working order.
36	Canal iron punt	2,812	1,454	120	
37	Do.	2,812	1,366	120	
38	Do.	2,812	1,175	120	
39	Do.	2,812	1,330	120	In good working order; lately repaired.
40	Iron deep boat	4,693	1,630	190	In working order.
44	Wooden deep boat	2,330	1,713	170	
45	Do.	2,117	2,565	170	
47	Do.	2,000	2,535	170	In good working order.
48	Do.	2,060	2,950	170	
49	Do.	2,000	2,242	170	
50	Do.	2,117	1,938	170	Under repairs.
65	Iron light boat	1,000	363	70	
66	Do.	1,000	765	70	
67	Do.	1,000	609	70	In working order.
68	Do.	1,000	462	70	
69	Do.	1,000	1,050	70	
70	Do.	1,000	422	70	Under repairs.
71	Do.	1,433	1,034	70	
72	Do.	1,433	762	70	In working order.
74	Do.	1,000	621	70	
75	Do.	1,000	711	70	In good working order.
77	Wooden light boat	750	495	75	Under repairs.
81	Iron flat	7,375	1,917	140	In good working order; lately repaired.
82	Wooden flat	2,722	1,201	150	
83	Do.	2,722	2,016	150	In working order.
84	Do.	2,722	1,817	150	
85	Do.	2,722	2,409	150	In good working order; lately repaired.
86	Do.	2,722	1,755	150	Under repairs.
87	Do.	2,722	2,001	150	
88	Do.	2,800	2,450	150	In good working order; lately repaired.
89	Do.	2,800	2,623	150	
90	Do.	2,800	2,001	150	In working order.
91	Do.	2,800	2,200	150	In good working order; lately repaired.
92	Do.	2,800	1,824	150	In working order.
93	Do.	2,800	2,279	150	
94	Do.	2,405	1,745	130	In good working order; lately repaired.
95	Do.	2,405	1,662	130	
96	Canal iron punt	3,610	1,305	120	In working order.
99	Wooden flat	2,405	2,506	130	In good working order; lately repaired.
100	Iron double trap punt	4,185	1,515	110	
101	Do.	4,185	1,738	110	
103	Circular trap punt	1,200	519	40	
104	Iron double trap punt	4,060	2,111	110	
105	Iron punt	6,960	5,075	140	
11	1st class staff boat	1,780	..	230	
12	2nd ,, do.	820	..	150	
13	2nd ,, do.	820	72	150	
14	1st ,, do.	1,400	239	230	In working order.
15	2nd ,, do.	800	136	150	
16	1st ,, do.	1,250	314	230	
17	2nd ,, do.	850	212	150	
18	1st ,, do.	1,400	470	230	
19	2nd ,, do.	850	283	150	
20	1st ,, do.	1,400	588	230	
21	2nd ,, do.	840	350	150	
22	1st ,, do.	1,783	1,634	230	
	Total ..	..	..	11,515	

Part II.—Barges, Boats and Punts—cont.

Registered number.	DETAILS OF PLANT. Description of Boats.	VALUE OF PLANT. Original.	VALUE OF PLANT. Present book value.	Probable cost of upkeep in 1891-92.	Remarks.
1	2	3	4	5	6
	Irrigation—cont.	RS.	RS.	RS.	
A	Upper Godávari barge	3,500	3,117	340	In working order.
D	Do.	3,500	2,237	340	In working order.
E	Do.	3,500	3,031	340	In working order.
	Total ..	..	..	1,020	
1	Jolly-boat	Not known.		60	In working order.
2	Do.	165	135	20	In working order.
3	Do.	340	276	16	In working order.
4	Do.	165	135	20	In working order.
5	Do.	Not known.		16	In working order.
6	Survey Nava	300	243	35	Under repairs.
7	Do.	300	243	35	In working order.
8	Jolly-boat of steamer "John Mullins."	Not known.		60	In working order.
	Total ..	..	..	262	
	Grand Total ..	..	..	12,797	

Rules for finding present book value.

1. Boats and barges to be reduced 10 per cent. every year and the amount of special repairs, if any, to be added thereto.
2. Staff boats to be reduced by one-twelfth of their original cost for each year of their life.

4th August 1890.

(Signed) J. INGLIS,
Assistant Engineer.

(Signed) W. JONES,
Boat Superintendent.

DETAILED approximate estimate of the annual cost of maintenance of the Irrigation Floating Plant, Godávari District.

Particulars.	Steamer "Shamrock."	Steamer "Victoria."	Steam Launch "Arthur Cotton."	Steam Tug "John Mullins."	Canal dredgers.	Barges.	Canal punts.	Dredge punts 30 feet long.	Wooden light boats.	Iron light boats.	Wooden flats 74 feet long.	Staff boats, first class.	Staff boats, second class.	Iron deep boats.	Iron flats Nos. 1 and 81 and iron punt No. 105.	No. 103 Circular trap punt.	Jolly-boats Nos. 1 and 8.	Double trap punts.	Wooden flats 60 feet 3 inches long.	Iron flat 60½ feet long.	Wooden deep boats.	Jolly-boats Nos. 2 and 4.	Jolly-boats Nos. 3 and 5.	Survey Navas.
	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.
Docking and launching ..	50	50	50	50	50	25	12	10	10	10	15	10	10	30	15	10	5	12	15	12	25	..	..	5
Painting	500	500	195	550	120	150	31	20	..	20	..	110	65	63	45	22	30	30	..	35	..	8	..	..
Caulking	70	43	18	80	50	30	36	20	40	10	110	40	33	20	36	..	18	30	90	40	99	8	12	24
Varnishing	..	20	..	..	..	..	..	..	..	..	..	10	..	..	..	..	..	..	..	..	..	..	..	..
Tarring	..	..	..	..	50	50	20	10	..	10	..	..	..	27	19	..	..	20	..	20	..	..	..	..
Ropes, &c.	30	30	30	30	30	58	11	10	20	10	14	10	12	37	14	5	2	10	14	15	34	4	4	6
Syrang	75	250	81	143	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Engine-driver	61	370	86	129	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Assistant Engine-driver ..	..	116	..	71	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Steersmen	33	191	44	58	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Firemen	77	150	125	110	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Lascars	124	220	33	115	20	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Small stores	80	100	58	104	12	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Centage	60	60	30	60	28	27	10	5	5	10	11	20	10	13	11	3	5	8	11	8	12	..	..	..
Sundry repairs	150	200	100	150	100	..	..	..	..	..	..	30	20	..	..	..	..	..	..	..	..	..	..	..
Total ..	1,310	2,300	850	1,650	460	340	120	75	75	70	150	230	150	190	140	40	60	110	130	130	170	20	16	35

4th August 1890.

(Signed) J. INGLIS,
Assistant Engineer.

(Signed) W. JONES,
Boat Superintendent.

(Signed) C. M. SMITH,
Executive Engineer, Godávari Eastern Division.

(Signed) J. W. MARTIN,
Superintending Engineer, I Circle.

ABSTRACT showing the comparison of details between the estimated maintenance cost of Floating Plant in the Godávari District for 1890-91 and 1891-92.

—	Number.		Original value.		Book value.		Cost of upkeep.	
	1891-92	1890-91.	1891-92.	1890-91.	1891-92.	1890-91.	1891-92.	1890-91.
			RS.	RS.	RS.	RS.	RS.	RS.
Steamers	4	4	7,11,505	1,11,505	70,805	83,030	6,110	5,640
Dredgers	8	9	1,94,194	1,94,994	49,379	58,677	3,220	3,730
Barges A, D and E from Upper Godávari Works ..	3	4	10,500	14,000	8,385	10,846	1,020	1,360
Iron flats, Nos. 1, 34 and 81.	3	3	18,311	18,311	5,589	5,803	410	410
Iron punts, Nos. 2 to 11, 14 to 17, 19 and 20, 23 to 33, 36 to 39, and 96 and 105.	33	33	97,730	97,730	50,942	51,783	3,980	3,980
Iron dredge punts, Nos. 13, 18, 21 and 22	4	4	9,240	9,240	2,833	3,146	300	300
Double trap punts, Nos. 100, 101 and 104	3	3	12,430	12,430	5,364	5,959	330	330
Circular trap punt, No. 103.	1	1	1,200	1,200	519	576	40	40
Iron deep boats, No. 40 ..	1	3	4,693	14,893	1,630	5,589	190	580
Iron light beats, Nos. 65 to 72 and 74 to 75 ..	10	10	10,866	10,866	6,799	7,445	700	700
Wooden deep boats, Nos. 44, 45, 47 to 50	6	6	12,564	12,564	13,943	13,859	1,020	1,020
Wooden light boats, No. 77.	1	2	750	950	495	681	75	150
Wooden flats, Nos. 82 to 95 and 99	15	15	40,347	40,347	30,489	27,255	2,190	2,190
Staff boats, 1st class, Nos. 11 14, 16, 18, 20 and 22 ..	6	6	9,108	9,108	3,245	4,000	1,380	1,380
Staff boats, 2nd class, Nos. 12, 13, 15, 17, 19 and 21.	6	6	4,980	4,980	1,053	1,467	900	900
Jolly-boats, and Survey "Navas," Nos. 1 to 5, and 8, 6 and 7 ..	8	8	1,270	1,270	1,032	1,144	262	262
Total ∴	112	117	5,39,688	5,54,388	2,52,502	2,81,260	22,127	22,972

DOWLAISHWERAM,
28th August 1890.

(Signed) J. W. MARTIN,
Superintending Engineer, I Circle

No. 145 I.

Submitted to Government. In his budget estimates for major works for the ensuing official year received with letter No. 429 G.L. of 26th September 1890, the Superintending Engineer, I Circle, has applied for Rs. 22,000 for the maintenance of the floating plant including existing ferries.

CHEPÂK,
7th October 1890.

(Signed) G. T. WALCH,
Chief Engineer for Irrigation.

To the Joint Secretary to Government,
Public Works Department, Irrigation Branch.

ORDER—dated 17th October 1890, No. 590 I., Public Works.

The estimate of the cost of maintaining the floating plant of the Godávari delta during 1891-92 is approved. Rupees 22,000 on this account and for repairs of the existing ferry boats in charge of the Public Works Department will be provided in the budget estimates of Major Works for that year.

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch

To the Chief Engineer for Irrigation.
" Superintending Engineer, I Circle.
" Examiner, Public Works Accounts.

IRRIGATION.
ACCOUNT.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated October, 17th.

Recd. *Encl.*

G.O., 17th Oct. 1890, No. 590 I.

OCTOBER.

Floating Plant, Godavari Delta

Estimate of the cost of maintaining the — during 1891-92, approved.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper:—

From G. D. WYBROW, Esq., Superintending Engineer, I Circle, to the Chief Engineer for Irrigation, dated Dowlaishweram, 24th September 1890, No. 769 G.N.

I have the honor to submit, herewith, for sanction, copy of a statement of modifications of allotments, received from the Executive Engineer, Rushikulya division. The reasons for modifications are entered against each item in the statement.

ENCLOSURE.

APPLICATION for additional or modification of allotments in the I Circle for 1890-91.

Item number.	Main and sub-head.	Name of work.	Existing grant.	Proposed Increase.	Proposed Reduction.	Sanctioned by Chief Engineer Increase.	Sanctioned by Chief Engineer Reduction.	Remarks.
		RUSHIKULYA DIVISION.	RS.	RS.	RS.	RS.	RS.	
		FAMINE RELIEF AND INSURANCE.						
		35. CONSTRUCTION OF PROTECTIVE IRRIGATION WORKS.						
		RUSHIKULYA PROJECT.						
		Mahánadi Section.						
1	(1) B ..	Compensation for Russellkonda reservoir dam	2,000	..	1,000	..	1,000	Not required for expenditure on land.
2	(1) C ..	Goomsur anicut	7,147	4,800	..	4,800	..	The allotment provided in the budget is insufficient to meet the expenditure during the year.
3	(1) C ..	Scouring sluice to Goomsur anicut	1,183	3,000	..	3,000	..	
4	(1) K ..	Rest-house at Galleri	..	1,050	..	1,050	..	An estimate for this work will be submitted shortly.
5	(1) K ..	Constructing store-shed at Doegam	..	310	..	310	..	Not provided in the budget.
6	(1) P ..	Repairs to Executive Engineer's bungalow at Doegam ..	..	100	..	100	..	Do. do.
7	(1) P ..	Repairs to Divisional office establishment lines at Doegam.	..	340	..	340	..	Do. do.
		Rushikulya Canal.						
8	(2) B ..	Compensation for land	48,000	..	35,000	..	35,000	Not required for expenditure on land.
9	(2) G ..	No. 4 bridge, Rushikulya canal	..	800	..	800	..	Not provided in the budget.
10	Do. ..	,, 6 do. do.	..	3,100	..	3,100	..	To meet the cost of iron work for bridge.
11	Do. ..	,, 7 do. do.	1,124	4,000	..	4,000	..	Do. do.
12	Do. ..	,, 8 do. do.	..	3,800	..	3,800	..	Do. do.
13	Do. ..	,, 9 do. do.	..	3,800	..	3,800	..	Do. do.
14	Do. ..	,, 10 do. do.	..	3,800	..	3,800	..	Do. do.
15	Do. ..	,, 11 do. do.	..	3,800	..	3,800	..	Do. do.
16	Do. ..	,, 12 do. do.	..	3,800	..	3,800	..	Do. do.
17	(2) L ..	Rushikulya canal	50,000	13,093	..	13,093	..	The amount provided in the budget is insufficient to meet the expenditure during the year.
		Reserve for works	20,325	..	20,325	..	20,325	Transferred to the above works.
		Add other works on which no modifications are proposed ..	1,59,432	..	..	..	..	
		Total, Works ..	2,89,211	49,593	56,325	49,593	56,325	
		Establishment at 23 per cent.	54,789	6,732	..	6,732	..	
		Tools and plant	6,000	..	..	..	..	
		Grand Total ..	3,50,000	56,325	56,325	56,325	56,325	

(Signed) W. C. DEMORGAN,
Executive Engineer, Rushikulya Division.

ORDER—dated 17th October 1890, No. 591 I., Public Works.

The modifications of allotments proposed by the Superintending Engineer are sanctioned.

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, I Circle.
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated October, 17th.

Recd. *Encl.*

G.O., 17th Oct. 1890, No. 591 I.

OCTOBER.

Modifications of Allotments, I Circle

The — proposed by the Superintending Engineer, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.

READ—the following paper :—

From C. VINCENT, Esq., Under-Secretary to the Government of India, Public Works Department (Civil Works—Irrigation), to the Secretary to the Government of Madras, Public Works Department, dated Simla, 29th September 1890, No. 177 I.

I am directed to acknowledge the receipt of your letter No. 454 I., dated the 21st August 1890, regarding the closure of the construction estimates of Irrigation works in Madras not charged against Revenue.

2. In reply, I am to state with regard to the Pennér anicut system, that the estimate for this project has already been exceeded and a complete revised estimate would be necessary before an extension of the period of the Secretary of State's sanction could be authorized. It therefore appears to the Government of India that the simplest plan will be to close the construction estimate of this project from the 30th April 1890, when the sanction expired. Any subsequent outlay which may be found necessary to carry out the works still remaining to complete the project can be regulated in accordance with the rules in Public Works Department Code, volume II, chapter XV, para. 156-III, as modified by Standing Order No. 191, dated 20th February 1890.

3. As regards the Barur Tank project, I am to say that the Government of India has no objection to the construction estimate of this project being kept open till the 31st March 1891.

4. As the construction estimates of the Cauvery delta and Srívaikuntham anicut systems are said to have been closed and as no further expenditure on Capital account of these systems is contemplated at present, I am to request that the Government of India may be furnished, for transmission to the Secretary of State, with completion reports on the works executed up to the time the construction estimates were closed, together with statements of actual expenditure and index maps of the canals and distributaries, as required by rule IV of the rules referred to in para. 2 *ante.*

ORDER—dated 17th October 1890, No. 592 I., Public Works.

In accordance with the instructions of the Government of India contained in its resolution No. 53 A.I., dated 20th June 1889, printed in Proceedings of the Madras Government, No. 362 I., dated 3rd August 1889, the amount of Rs. 37,500 by which the total of the sanctioned estimate for the Pennér anicut system was reduced on account of the estimated sale-proceeds of beds of tanks rendered unnecessary by the project, should not be taken in reduction of the estimate and should be written back.

2. The sanctioned amount for the project (see Proceedings of the Madras Government, No. 526 I. of 19th June 1885) therefore now becomes Rs. 16,50,289 for direct charges. The total expenditure incurred on the project to end of 1889-90 is Rs. 16,23,663 and the current year's grant is Rs. 6,000, making a total of Rs. 16,29,663. Thus a balance of Rs. 20,626 appears to be still available for expenditure.

3. The sanctioned estimate for the project therefore does not appear to have been exceeded and the Government of India will be requested to reconsider its orders for treating that estimate as closed on 30th April last.

4. The attention of the Superintending Engineers, II and IV Circles, is drawn to the necessity for submitting the reports required under para. 1503 of the Public Works Code as modified by Standing Order No. 1266, dated 19th June 1890, for the "Pennér Anicut System" and "Barur Tank Project" when construction estimates are closed.

5. The Superintending Engineer, VI Circle, will submit as soon as possible similar reports for the Cauvery delta and the Srívaikuntham anicut projects, the construction estimates for which have already been closed.

6. Ordered that the following letter be sent to the Government of India.

(Here enter No. 593 I., dated 17th October 1890.)

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, II Circle.
" " " IV "
" " " VI "
" Revenue Department.
" Examiner, Public Works Accounts.

IRRIGATION.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated October, 17th.

Recd. *Encl.*

G.O., 17th Oct. 1890, No. 592 I.

OCTOBER.

Closure of the Construction Estimates of certain Irrigation Works, Madras

Passing orders on letter from the Government of India making certain remarks regarding the—not charged to Revenue.

PUBLIC WORKS DEPARTMENT.

Irrigation.

Letter—from

G. T. WALCH, Esq.,
Joint Secretary to the Government of Madras,
Public Works Department,
Irrigation Branch,

To

The SECRETARY to the GOVERNMENT of INDIA,
Public Works Department.

Sir,

In forwarding herewith a copy of Proceedings of the Madras Government, No. 592 I., dated 17th October 1890, I am directed to request that the Government of India will be pleased to reconsider its orders for treating the construction estimate of the Pennér Anicut System as closed on 30th April last, the sanctioned estimate not having yet been exceeded.

I have the honor to be,
Sir,
Your most obedient servant,
(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

Fort St. George,
17th October 1890.

IRRIGATION.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated October, 17th.

Recd. *Encl.*

17th Oct. 1890, No. 593 I.

OCTOBER.

Penner Anicut System

Requesting to reconsider the orders for treating the construction estimate of the — as closed on 30th April last; the sanctioned estimate not having yet been exceeded.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following paper :—

From Major D. McNEIL CAMPBELL, R.E., Superintending Engineer, Periyár Project, to the Chief Engineer, Public Works Department, dated Periyár, 4th October 1890, No. 1727 P.R.

I have the honor to forward herewith, for favor of sanction,* an estimate, amounting to Rs. 4,570, for reconstructing No. II lock weir near Thekady.

* From the provision for unforeseen works at the disposal of the Chief Engineer for Irrigation.

2. The necessity for the estimate is owing to the old weir having been carried away by the fresh of the 22nd July. The cause, it is reported, was probably due to the scouring out of the bed below, though it may have been caused by timber being dashed against it. A deep hole has also been formed at the site of the weir which makes it necessary to take the foundation down deep.

3. The weir proposed is of the ordinary form with body and wing walls, the rear wing walls being carried down to the same depth as the body wall. As I find the soil is not rock but very slushy, I have provided flooring and apron for a width of 7 feet 6 inches and 15 feet respectively and to the section shown on the drawing. I have also put an item in the estimate as desired by you allowing sheet piling 2 inches thick and 6 feet high all round.

4. The length 70 feet is allowed, with 2 feet going over, giving a discharge of 630 cubic feet per second, the maximum discharge of the river here probably not exceeding 500 cubic feet per second. The lower portions will be built in surki mortar, the upper of ordinary mortar, and the front face pointed with cement. As the work is of an emergent nature, I have ordered the execution of the work in anticipation of your formal sanction.

Order—dated 18th October 1890, No. 594 I., Public Works.

The following estimate is sanctioned from the balance of the amount reserved for unforeseen works of the Periyár Project, which will then be reduced to Rs. 43,603 :—

Capital Expenditure not charged to Revenue.
49. Irrigation.
Periyár Project.
I. Works.
(1) Head Works.
O. Miscellaneous.

	RS.
Reconstructing No. II lock weir near Thekady, estimate	4,570

2. This sanction has been registered as No. 74 I. of 1890-91.

(True Extract.)

(Signed) J. PENNYCUICK, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation.
„ Superintending Engineer, Periyár Project, with four enclosures.
„ Examiner, Public Works Accounts.
„ Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated October, 18*th.*

Recd. *Encl.*

G.O., 18th Oct. 1890, No. 594 I.

OCTOBER.

Periyar Project

Estimate of Rs. 4,570 for reconstructing No. II lock weir near Thekády—, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.

READ—the following paper :—

From C. VINCENT, Esq., Under-Secretary to the Government of India, Public Works Department (Civil Works—Irrigation), to the Secretary to the Government of Madras, Public Works Department, dated Simla, 4th September 1890, No. 160 I.

The Government of India has had under consideration the question of introducing a uniform system of recording the returns of traffic on the navigable canals of the different Provinces; the returns as now submitted exhibiting many points of diversity.

2. Before issuing definite orders on the subject, the Government of India is anxious to obtain the criticisms of the Local Governments on draft forms which have been prepared in this office and which it is proposed to issue for general adoption. I am therefore directed to enclose a copy of these forms, and to request that the opinion of the Government of Madras regarding them may be communicated to the Government of India as soon as possible.

3. With regard to the manner in which the returns of traffic are now exhibited, I am to offer the following observations:—

Punjab.—The navigation on the inundation canals is so insignificant that the traffic returns may perhaps be confined to the perennial canals.

North-Western Provinces.—The form proposed is identical with that now adopted by the North-Western Provinces, but the fourth and fifth entries under "nature of cargo" might be divided into "wheat" and "other grains." The figures in columns 11 to 16 should be shown in tons instead of in maunds.

Bengal.—(1) The fourth and fifth entries might be divided into "rice" and "other grains."

(2) The separate figures given for each canal in the Orissa and Sone systems for tonnage, ton-mileage, value of goods, and number of passengers seem unnecessary. The figures may be given for the whole of each system.

(3) In the case of the Nuddea rivers and the Hidgellee, Calcutta and Eastern, and Orissa Coast canals, it is difficult to determine what constitutes "up" and "down" respectively, and this should be rendered clear in the returns.

Madras.—(1) The figures relating to each description of cargo should be separated. The fourth and fifth entries should be "rice" and "other food grains" if they can be conveniently separated.

(2) It will not be necessary to give the figures for each canal; those for each system will be sufficient.

(3) On the Kistna and Godávari canals there will be no difficulty in determining what constitutes "up" and "down" respectively in the form proposed, but in the case of the other canals this should be made clear.

4. I am to add that it is proposed to discontinue the half-yearly submission of these traffic returns, and to have instead one return for the whole of the official year. The date by which this return could be prepared should be stated when replying to this reference.

ENCLOSURES.

FORM I.—FOR EACH SYSTEM OF NAVIGATION CANALS.

Comparative Return of Traffic carried on the *Canal for the year* 18 -18 .

—	Demands.		Collection during current year.	Balance uncollected.	Previous year.		Nature of cargo.	Traffic crossing the boundary between (a) and (b). Tonnage.		Current year.			Previous year.			Tonnage.		Ton-mileage.		Value of goods.		Number of passengers.	
	Balance from last year.	For current year.			Demands.	Collections.		From (a) To (b) (Exports).	Into (b) From (a) (Imports).	Up.	Down.	Total.	Up.	Down.	Total.	1888-89.	1889-90.	1888-89.	1889-90.	1888-89.	1889-90.	1888-89.	1889-90.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
	RS.	RS.	RS.	RS.	RS.	RS.				TONS.	TONS.	TONS.		TONS.	TONS.					RS.	RS.		
Tollage.							1. Cotton, raw and manufactured ..																
Private boats ..							2. Woollen goods, raw and manufactured.																
Government boats ..							3. Dyes and tans ..																
Rafts							4. Wheat * ..																
Carrying operations, &c.							5. Other food grains.																
Boating (Government).							6. Hides and skins ..																
Ferries and sundries.							7. Liquors ..																
Ground rents ..							8. Metals																
Fines							9. Oils																
Refunds							10. Oilseeds ..																
							11. Provisions ..																
							12. Salt																
							13. Spices																
							14. Sugar																
							15. Tobacco ..																
							16. Building materials.																
							17. Miscellaneous goods																
							18. Timber																
							19. Firewood ..																
							20. Bamboos ..																
							21. Coal and coke ..																
Total ..							Total ..																

* "Wheat" for Punjab and North-Western Provinces, "Rice" for Bengal and Madras.
(a) an◡ (b) = Province. Commodities sent from the Province which renders the return are exports, and articles received imports.

FORM II.—FOR ALL THE NAVIGATION CANALS OF THE PROVINCE.

Summary of Comparative Returns of Traffic on the Canal for the year 18 -18 .

Canals.	Demands.		Collections.		Traffic.		Tonnage.		Ton-mileage.		Value of goods.		Number of passengers.	
	1888-89.	1889-90.	1888-89.	1889-90.	1888-89.	1889-90.	1888-89.	1889-90.	1888-89.	1889-90.	1888-89.	1889-90.	1888-89.	1889-90.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Total ..														

No. 146 I.

Note by the Chief Engineer for Irrigation.

With reference to letter No. 160 I., dated 4th September 1890, from the Government of India, one of the forms now in use for registering the traffic on the Godávari and Kistna canals is sent herewith and it will be seen that it provides for the registration in the same way as regards the main items as recommended by the Government of India.

2. There seems no reason why the classification of nature of cargoes suggested by the Government of India should not be adopted, but the following additions are recommended, viz:—

Cocoanuts.
Hemp.
Railway materials.
Treasure.

The last item is an important one on some of the canals and till it was introduced, the values of "Miscellaneous" used often to appear inordinately great.

3. The annual returns for each official year might be submitted by the end of each May.

Chepâk,
9th October 1890.

(Signed) G. T. WALCH,
Chief Engineer for Irrigation.

To the Joint Secretary to Government,
Public Works Department, Irrigation Branch.

Order—dated 20th October 1890, No. 595 I., Public Works.

Ordered that the following letter be sent.

(Here enter No. 596 I., dated 20th October 1890.)

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, I Circle.
" " " II "
" " " III "
" " " VI "
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated October, 20th.

Recd. *Encl.*

G.O., 20th Oct. 1890, No. 595 I.

OCTOBER.

Returns of Traffic on the Navigable Canals

Ordered that the Government of India be addressed on the subject of the introduction of a uniform system of recording the — of the different Provinces.

PUBLIC WORKS DEPARTMENT.

Irrigation.

LETTER—from

G. T. WALCH, ESQ.,

Joint Secretary to the Government of Madras,
Public Works Department,
Irrigation Branch,

To

THE SECRETARY TO THE GOVERNMENT OF INDIA,
PUBLIC WORKS DEPARTMENT.

SIR,

I am directed to forward a note by the Chief Engineer for Irrigation with reference to your letter No. 160 I., dated 4th September 1890, and to say that the proposals made in that letter as far as they affect this Presidency meet with the general concurrence of this Government.

2. I am also to say that the suggestions made in paras. 2 and 3 of the note by the Chief Engineer for Irrigation are approved and recommended for adoption.

I have the honor to be,
Sir,
Your most obedient servant,

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

FORT ST. GEORGE,
20th October 1890.

IRRIGATION.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated October, 20th.

Recd. *Encl.*

20th Oct. 1890, No. 596 I.

OCTOBER.

Returns of Traffic on the Navigable Canals.

On the subject of the introduction of a uniform system of recording the — of the different Provinces.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper :—

No. 527 T.N.

REPORT by the Superintending Engineer, VI Circle, on the estimate of Rs. 2,700 for improving the Alapacheri Tank in Srívilliputur Taluk, Tinnevelly District.

Alapacheri tank is supplied by a channel taken off the left bank of Modanghiaur river, and it is numbered 26 in the Imperial list. It commands an ayacut of 197 acres yielding a revenue of Rs. 1,437.

2. The supply channel has neither an anicut nor a head-sluice. The bed requires deepening ; the right bank is to be made up as shown in the level sections, the left bank being left as it is so that the water during the maximum rise may overflow as usual. The right bank is to be 2 feet above M.W.L. with a top width of 4 feet and side slopes $1\frac{1}{2}$ to 1.

3. The bund of the tank is low and weak and it has had no repairs for the last 15 years ; the only outlay incurred on it was on emergent estimate No. 151 of 1888-89, Rs. 280. The estimate provides for its restoration to a proper section. Its top will be 5 feet wide and 3 feet above M.W.L. with a front slope of $1\frac{1}{2}$ to 1 and rear slope 2 to 1.

4. The tank has three sluices—Nos. 1 and 3 are out of order and No. 2 is leaky in front and requires improved means of regulation. It is proposed to reconstruct sluices Nos. 1 and 3 and to provide tower head to sluice No. 2.

5. There is a surplus calingulah in the tank with short dam stones and 3 vents each 4′ × 4′ 6″ ; its length measures $36\frac{1}{2}$ feet between the wings, one of which requires reconstruction, being cracked and much damaged. The drainage area of the tank is 1 square mile and the discharge from it with a coefficient of 450 is 415 cubic feet ; the discharge from supply channel is calculated to be 292 cubic feet per second, the total quantity of surplus to be disposed of being 707 cubic feet per second. To discharge this a weir 75 feet long with a head of 2 feet is necessary. As there is a natural escape of 500 feet long at the southern end of the tank, no extension of the existing surplus work is proposed. It is now proposed to convert the calingulah into a weir by raising the crest flush with F.T.L. and to improve the wings by raising and lengthening the one and rebuilding the other as shown on the plan. Provision is also made in the estimate for new shutters to vents in the body wall, as the old ones are rotten.

6. The works proposed are necessary to place the tank in efficient order.

7. The rates entered are fair and the estimate is recommended for sanction.

(Signed) A. C. SMITH, Lt.-Col., R.E.,
Superintending Engineer, VI Circle.

4th September 1890.

No. 149 I.

Submitted to Government. The estimate as altered in this office amounts to Rs. 2,700 and is recommended for sanction.

2. The proposed byewash at right flank by which it is proposed to let water escape is above F.T.L. It is presumed that the possibility of cutting it down to that level and so reducing M.W.L. and height of bund has been considered.

CHEPÂK, (Signed) G. T. WALCH,
11th October 1890. Chief Engineer for Irrigation.

To the Joint Secretary to Government,
Public Works Department, Irrigation Branch.

ORDER—dated 20th October 1890, No. 597 I., Public Works.

The following estimate is sanctioned :—

Irrigation.
43. Minor Works and Navigation.
Irrigation and Navigation.
Works for which neither Capital nor Revenue Accounts are kept.
Tinnevelly Division.
Original Works.

	RS.
Improving Alapacheri tank No. 26 in list of "Imperial" works, estimate	2,700

2. This sanction has been registered as No. 75 I. of 1890-91.

3. The attention of the Superintending Engineer will be drawn to para. 2 of the note by the Chief Engineer for Irrigation.

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, VI Circle, with sixteen enclosures.
" Examiner, Public Works Accounts.
" Revenue Department.
" Editors' Table.

IRRIGATION.
ACCOUNT.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated October, 20th.

Recd. *Encl.*

G.O., 20th Oct. 1890, No. 597 I.

OCTOBER.

Alapacheri Tank, Tinnevelly Division

Estimate of Rs. 2,700 for improving the —, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following paper :—

Office note from the Examiner, Public Works Accounts, dated Madras, 2nd October 1890, No. 5897.

Herewith the statements of financial results of Irrigation works for the year 1889-90 to be submitted to the Government of India with reference to their Circular (Public Works) No. XXIII of 1881 and Public Works Code, para. 1559.

2. Please have columns 2 and 3 of table I and the area irrigated by the Kurnool canal filled up in your office.

Enclosures.

MADRAS PRESIDENCY.

Statement showing the financial results of Irrigation and Navigation Works for and up to end of 1889-90.

Table I.—Principal results of operations for the year ended 31st March 1890.

Irrigation works.	Mileage in operation. Main Canal.	Mileage in operation. Distribution.	Direct Capital outlay during the year 1889-90 (including cost of establishment and tools and plant).	Gross receipts direct and indirect from all sources.	Working expenses.	Net revenue (excluding charges for interest).	Interest (at 4 per cent. on direct Capital outlay at commencement of the year and at 2 per cent. on outlay during year).	Surplus revenue after paying interest on direct Capital outlay. Amount.	Surplus revenue after paying interest on direct Capital outlay. Percentage on total sum at charge.	Excess charge including interest on direct Capital outlay. Amount.	Excess charge including interest on direct Capital outlay. Percentage on total sum at charge.	Area of land irrigated during the year.	Gross receipts per acre irrigated.	Working expenses excluding interest per acre irrigated.	Percentage of working expenses on gross receipts.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Major Irrigation Works.	MILES.	MILES.	RX.	RX.	RX.	RX.	RX.	RX.		RX.		ACRES.	RX.	RX.	
Productive Public Works.															
Godávari delta system ..	506	1,718	7,231	2,22,409	57,337	1,65,072	43,188	1,21,884	(b)	..	..	673,916	·33	·08	25·78
Kistá do. ..	312	750	49,524	1,63,038	44,470	1,18,568	34,361	84,207	(b)	..	..	436,815	·37	·10	27·28
Cauvery do. ..	428	1,250	— **2**	82,158	9,286	72,872	6,624	66,248	(b)	..	..	1,010,698	·08	·01	11·30
Pennér anicut system ..	22	120	1,209	14,738	1,920	12,818	6,470	6,348	5·42	..	..	66,171	·22	·03	13·03
Srívaikuntham anicut system ..	28	62	..	10,456	2,355	8,101	5,404	2,697	1·87	..	..	39,785	·26	·06	22·52
Sangam anicut system ..	9	243	4,300	12,724	5,461	7,263	11,758	..	..	4,495	1·11	64,926	·19	·09	42·92
Kurnool canal	190	313	— **96**	7,560	11,957	— **4,397**	86,568	..	..	90,965	3·26	21,851	·34	·55	158·16
Barúr tank project	7	20	3,026	266	315	— **49**	1,453	..	..	1,502	3·34	1,711	·15	·18	118·42
Periyár project (a)	..	..	74,201	..	..	..	4,940	..	..	4,940	2·96	..	..	..	..
Total ..	1,502	4,476	1,39,393	5,13,349	1,33,101	3,80,248	2,00,766	1,79,482	15·88	..	..	2,315,873	·22	·06	25·93
Protective Public Works.															
Rushikulya project (a) ..	..	..	31,421	..	..	..	4,890	.	..	4,890	2·89	..	..	..	..
Total, Major Works ..	..	..	1,70,814	5,13,349	1,33,101	3,80,248	2,05,656	1,74,592	13·45	..	..	..	..	..	..
Minor Works and Navigation.															
Provincial.															
Chembrambakam tank ..	27	..	..	2,220	1,782	438	2,498	..	..	2,060	2·98	14,469	·15	·12	80·27
Pálár anicut system	152	127	3,062	12,886	10,507	2,379	7,103	..	..	4,724	1·96	93,848	·14	·11	81·54
Pelandorai anicut system ..	39	24	42	1,427	1,840	— **413**	1,615	..	..	2,028	2·21	5,994	·24	·30	128·94
Buckingham canal (c) ..	262	..	19,295	7,574	14,723	— **7,149**	27,714	..	..	34,863	3·32	..	..	..	194·39
Madras Water-supply and Irrigation Extension project ..	10	..	..	2,371	543	1,828	6,063	..	..	4,235	1·38	10,689	·22	·05	22·90
Chilka Lake canal (c)	8	..	85	..	181	— **181**	109	..	..	290	..	..	..	..	..
Lower Coleroon	..	..	..	..	..	..	160	..	..	160	..	..	..	..	..
Vedarniem canal (c)	34½	..	..	65	656	— **591**	..	..	..	591	..	..	..	..	1,009·08
Kovur-Manjair junction canal ..	9	..	..	..	..	..	242	..	..	242	..	..	..	..	..
Ganjam-Gopálpur canal (d) ..	..	..	6,425	..	..	..	430	..	..	430	..	..	..	..	..
Total ..	541½	151	28,909	26,543	30,232	— **3,689**	45,934	..	..	49,623	2·78	125,000	·21	·24	113·90

(a) These systems are under construction.
(b) No percentages can be shown here, the total sum at charge in column 8 of table II resulting in *minus* entries.
(c) These are not irrigation systems but salt-water canals purely for navigation.
(d) This was started as a famine relief work during the recent scarcity in the Ganjam district; when the work was no longer required for famine purposes it was stopped. The canal would be simply for *navigation* and in no way for irrigation.

Madras,
2nd October 1890.

(Signed) F. MORRISON,
Offg. Examiner, Public Works Accounts.

STATEMENT showing the financial results of Irrigation and Navigation Works for and up to 1889-90.

Table II.—General financial results of the several undertakings to 31st March 1890.

Irrigation works.	Estimated cost of construction (exclusive of all indirect charges.)	Date of completion of works.	Capital outlay including cost of Establishment and Tools and Plant		Capitalized value of land revenue on land occupied by canal, leave and pension allowances.	Excess interest over net revenue in past years.	Total sum at charge against the work at end of 1889-90.	Interest at 4 per cent. on sum at charge at end of 1889-90.	Surplus for the year of net revenue over interest on total sum at charge.	Excess for the year of interest on total sum at charge over net revenue.	Capitalized value at 4 per cent. of net revenue (excluding charges for interest.)	Surplus sum at credit in excess of total sum at charge against the work.	Excess sum at charge over capitalized value of net revenue.
			At commencement of 1889-90.	At close of 1889-90.									
1	2	3	4	5	6	7	8	9	10	11	12	13	14
MAJOR IRRIGATION WORKS.	RX.		RX.	RX.	RX.	RX.	RX.	RX.	RX.	RX.	RX.	RX.	RX.
Productive Public Works.													
Godávari delta system	11,08,933	1846-47	10,76,075	10,83,306	1,88,618	— **22,88,703**	— **10,16,779**	— **40,671**	2,05,743	..	41,26,800	51,43,579	..
Kistna do.	13,91,978	1855-56	8,34,252	8,83,776	65,908	— **10,11,710**	— **62,026**	— **2,481**	1,21,049	..	29,64,200	30,26,226	..
Cauvery do.	1,66,293	1836-37	1,65,608	1,65,606	12,339	— **16,37,478**	— **14,59,533**	— **58,381**	1,31,253	..	18,21,800	32,81,333	..
Pennér anicut system	1,61,279	1860-61	1,61,157	1,62,366	24,328	— **69,612**	1,17,082	4,683	8,135	..	3,20,450	2,03,368	..
Srívaikuntham anicut system ..	1,36,152	1870-71	1,35,103	1,35,103	10,051	— **1,259**	1,43,895	5,756	2,345	..	2,02,525	58,630	..
Sangam anicut system ..	3,00,000	1884-85	2,91,788	2,96,088	66,003	40,611	4,02,702	16,108	..	8,845	1,81,575	..	2,21,127
Kurnool canal	Purchased.	1882-83	21,64,265	21,64,168	..	6,28,650	27,92,818	1,11,713	..	1,16,110	— **1,09,925**	..	29,02,743
Barúr tank project	40,000	1887	34,820	37,847	2,009	5,050	44,906	1,796	..	1,845	— **1,225**	..	46,131
Periyár project	5,42,500	..	86,392	1,60,593	3,383	2,812	1,66,788	6,671	..	6,671	..	..	1,66,788
Total ..	38,47,135	..	49,49,460	50,88,853	3,72,639	— **43,31,639**	11,29,853	45,194	3,35,054	..	95,06,200	83,76,347	..
Protective Public Works.													
Rushikulya project	2,60,529	..	1,06,548	1,37,970	21,607	9,510	1,69,087	6,763	..	6,763	..	..	1,69,087
Total, Major Works ..	41,07,664	..	50,56,008	52,26,823	3,94,246	— **43,22,129**	12,98,940	51,957	3,28,291	..	95,06,200	82,07,260	..
MINOR WORKS AND NAVIGATION.													
Provisional.													
Chembrambakam tank ..	65,531	1870-71	62,443	62,443	11,216	— **4,599**	69,060	2,762	..	2,324	10,950	..	58,110
Pálár anicut system	1,89,492	1853-54	1,76,038	1,79,101	9,462	52,592	2,41,155	9,646	..	7,267	59,475	..	1,81,680
Pelandorai anicut system ..	41,300	1875-76	40,354	40,395	4,135	47,237	91,767	3,671	..	4,084	— **10,325**	..	1,02,092
Buckingham canal (*a*) ..	8,61,200	1837-38	6,83,203	7,02,499	44,646	3,01,187	10,48,332	41,933	..	49,082	— **1,78,725**	..	12,27,057
Madras Water-supply and Irrigation Extension project ..	1,58,100	1870-71	1,51,583	1,51,583	23,822	1,30,222	3,05,627	12,225	..	10,397	45,700	..	2,59,927
Chilka Lake canal (*a*)	3,000	..	2,688	2,773	72	458	3,303	132	..	313	— **4,525**	..	7,828
Lower Coleroon	..	..	4,010	4,010	..	575	4,585	184	..	184	..	..	4,585
Vedarniem canal (*a*)	..	..	..	..	..	1,750	1,750	70	..	661	— **14,775**	..	16,525
Kovur-Manjair junction canal ..	..	..	6,062	6,062	..	845	6,907	276	..	276	..	..	6,907
Ganjam-Gopálpur canal (*b*) ..	43,100	..	7,526	13,950	530	608	15,088	604	..	604	..	..	15,088
Total ..	13,61,723	..	11,33,907	11,62,816	93,883	5,30,875	17,87,574	71,503	..	75,192	— **92,225**	..	18,79,799

Note.—This statement includes Kurnool canal purchased from the late Madras Irrigation Canal Company. The result of taking over this work in 1882-83 was to reduce the percentage of net revenue on Capital cost of Irrigaiion works in Madras for which Capital and Revenue Accounts are kept from 14·9 the average of three years immediately preceding the transfer to 5·4.

(*a*) These are salt-water canals solely for navigation.

(*b*) Started as a famine relief work during the recent scarcity in the Ganjam district, the work was stopped when no longer required for a fmine purposes. The canal would not be for irrigation, solely for navigation.

MADRAS,
2nd October 1890.

(Signed) F. MORRISON,
Offg. Examiner, Public Works Accounts.

STATEMENT showing the financial results of Irrigation and Navigation Works for and up to 1889-90.

Table III.—Main heads of Revenue and Working Expenses for the year ended 31st March 1890.

Irrigation works.	Revenue.										Working Expenses.														
	Irrigation.										Revenue management.					Maintenance of works.									Grand total R and M.
											Establishment charges.					Establishment charges.									
	Water-rates directly paid.	Share of land revenue.	Total.	Navigation.	Plantation and lands.	Water-power.	Miscellaneous.	Total.	Remission of revenue.	Net revenue.	Direction.	Execution.	Navigation.	Civil officers.	Total R.	Direction.	Execution.	Medical.	Total.	Works.	Repairs.	Tools and Plant.	Plantation.	Total M.	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
MAJOR IRRIGATION WORKS.	RX.	RX.	RX.	RX.	RX.	RX.	RX.	RX.	RX.	RX.	RX.	RX.	RX.	RX.	RX.	RX.	RX.	RX.	RX.	RX.	RX.	RX.	RX.	RX.	RX.
Productive Public Works.																									
Godávari delta system ..	1,95,356	15,562	2,10,918	9,425	385	..	1,682	11,492	1	2,22,409	2,574	10,296	..	10,546	23,416	1,243	4,973	..	6,216	1,949	21,503	4,220	33	33,921	57,337
Kistna do. ..	1,41,959	16,586	1,58,545	2,873	332	..	1,297	4,502	9	1,63,038	1,794	7,174	..	7,927	16,895	915	3,659	..	4,574	1,775	18,054	3,035	137	27,575	44,470
Cauvari do. ..	66,443	14,993	81,436	..	364	..	372	736	14	82,158	812	3,248	..	4,072	8,132	47	186	..	233	4,306	—3,246	—139	..	1,154	9,286
Pennér anicut system ..	12,973	1,715	14,688	..	..	..	51	51	1	14,738	157	627	..	734	1,518	14	57	..	71	—108	439	..	..	402	1,920
Srivaikuntham anicut system	10,157	184	10,341	..	..	..	115	115	..	10,456	124	497	..	517	1,138	46	183	..	229	473	523	— 8	..	1,217	2,355
Sangam anicut system ..	11,939	693	12,632	..	..	..	92	92	..	12,724	145	580	..	632	1,357	153	611	..	764	703	2,617	20	..	4,104	5,461
Kurnool canal	6,376	..	6,376	136	..	..	1,083	1,219	35	7,560	101	404	..	..	505	408	1,630	..	2,038	1,181	7,713	515	5	11,452	11,957
Barur tank project ..	256	..	256	..	..	..	10	10	..	266	3	13	..	13	29	10	43	..	53	..	233	..	..	286	315
Total ..	4,45,459	49,733	4,95,192	12,434	1,081	..	4,702	18,217	60	5,13,349	5,710	22,839	..	24,441	52,990	2,836	11,342	..	14,178	10,279	47,836	7,643	175	80,111	1,33,101
MINOR WORKS AND NAVIGATION.																									
Provincial.																									
Chembrambakam tank ..	2,132	85	2,217	..	..	..	3	3	..	2,220	..	..	..	111	111	63	252	..	315	1,123	244	— 11	..	1,671	1,782
Pálár anicut system ..	11,300	1,488	12,788	..	..	..	98	98	..	12,886	2	8	..	639	649	368	1,475	..	1,843	2,279	5,736	..	..	9,858	10,507
Pelandorai do. ..	1,415	12	1,427	..	..	..	..	..	..	1,427	..	..	..	71	71	66	265	..	331	206	1,232	..	..	1,769	1,840
Buckingham canal (*a*) ..	..	..	..	7,618	43	..	219	7,880	306	7,574	158	630	..	..	788	512	2,045	..	2,557	512	10,560	255	51	13,935	14,723
Madras Water-supply and Irrigation Extension project	1,150	47	1,197	..	..	..	1,174	1,174	..	2,371	23	94	..	60	177	14	55	..	69	—230	528	— 1	..	366	543
Chilka Lake canal (*a*) ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	7	27	..	34	..	147	..	..	181	181
Vedarniem canal (*a*) ..	..	..	..	65	..	..	..	65	..	65	1	6	..	..	7	24	97	..	121	..	528	..	..	649	656
Total ..	15,997	1,632	17,629	7,683	43	..	1,494	9,220	306	26,543	184	738	..	881	1,803	1,054	4,216	..	5,270	3,890	18,975	243	51	28,429	30,232

(*a*) These are salt-water canals solely for *navigation*.

MADRAS,
2nd October 1890.

(Signed) F. MORRISON,
Offg. Examiner, Public Works Accounts.

ORDER—dated 20th October 1890, No. 598 I., Public Works.

Ordered that the statements received from the Examiner of Public Works Accounts be forwarded to the Government of India with reference to their Circular No. XXIII of 1881.

(Here enter No. 599 I., dated 20th October 1890.)

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
To Superintending Engineers.
To the Examiner, Public Works Accounts.
" Revenue Department.

ENDORSEMENT—dated 20th October 1890, No. 599 I., Public Works.

Forwarded accordingly.

(By Order.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

IRRIGATION.
ACCOUNT.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated October, 20th.

Recd. *Encl.*

G.O., 20th Oct. 1890, Nos. 598 I., 599 I.

OCTOBER.

Financial Results of Irrigation Works

Forwarding statements of — for the year 1889-90.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper :—

No. 150 I.

Note by the Chief Engineer for Irrigation.

The Superintending Engineer, III Circle, having, in his letter, No. 1730, dated 12th September 1890, represented the necessity for an additional allotment for the Kurnool-Cuddapah canal under Tools and Plant, the following transfer of funds is recommended for the sanction of Government :—

Imperial.
42. Major Works (Working Expenses).

From	RS.	*To*	RS.
Maintenance and Repairs	4,000	Tools and Plant	4,920
Establishment	920		
Total ...	4,920	Total ...	4,920

CHEPÂK,
11th October 1890.

(Signed) G. T. WALCH,
Chief Engineer for Irrigation.

To the Joint Secretary to Government,
Public Works Department, Irrigation Branch.

ORDER—dated 20th October 1890, No. 600 I., Public Works.

Sanctioned.

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
,, Superintending Engineer, III Circle, with one enclosure.
,, Examiner, Public Works Accounts.
,, Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated October, 20th.

Recd. *Encl.*

G.O., 20th Oct. 1890, No. 600 I.

OCTOBER.

Transfer of Funds

Sanctioning certain —.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.

READ—the following paper :—

From Major D. McNEIL CAMPBELL, R.E., Superintending Engineer, Periyár Project, to the Chief Engineer, Public Works Department, dated Periyár, 9th October 1890, No. 1756 P.R.

I have the honor to forward herewith the report of the Executive Engineer, No. I Periyár Division, on the progress of works during September 1890.

2. Very little rain and a low river allowed the work to be carried on without interruption and a good deal was done.

3. The chief work done was building walls inside the walls built last season so as to be able to deal with the leakage through the latter; a considerable amount of excavation at the sides was also done, but rock has not yet been met with.

4. The river was diverted on the 22nd through four new vents that had been constructed with floor level + 10; as two of the piers between the main wall and the new piers had been washed away, the gap to be closed was 40′ wide, and this was done by sand-bag bunds; no difficulty was experienced in diverting the river in this manner, but the leakage under the bund was so excessive owing to the soil being decayed rock and gravel mixed with sand that the greatest difficulty has been experienced in building the front wall; this had to be done in small sections, water being kept down by one pulsometer, four hand pumps and as many baling baskets as there was room for; the work under these circumstances was necessarily very slow and expensive, and there is still about 6 feet left to join on to the existing wall, but another three days should see this completed.

5. Slightly better progress has been made with the workshops, but it is still not satisfactory.

6. The works in the Thekady sub-division are making good progress.

7. Labor is plentiful, but the health is bad and fever prevalent.

8. Report of progress of works in No. II Periyár division will be submitted as soon as received from the Executive Engineer to whom a reminder has been sent.

ENCLOSURE.

REPORT of Progress during September 1890.

The monsoon proved to have practically failed and there was only a little over 3 inches of rainfall during the month and the river kept low.

2. In the foundation of the main dam masonry was proceeded with, the portions in progress being the wall behind the front wall, the middle portion of which was nearly completed, the portion on the left flank was continued, the work here being slow as a few men only can work in the confined space, the rotten rock was being removed from the front of the masonry of last year and new masonry built on to it down to the solid rock. A small portion only remains to be built between the new wall and the solid mass on which the extremity of the left flank was built. Excavation went down to—13 here. The masonry along the right side of the foundation enclosure was proceeded with. The inside lower wall was carried up to 4. A pulsometer was put in place between the two lower walls and worked by a steam pipe from the 12 horse-power engine which worked the Gwynne at the same time. The pulsometer and

two hand pumps kept the leakage down to enable the inner wall to set. On the right flank of the upper wall the new piers were completed, leaving four vents with their sill at a uniform level of ·10. A gunny-bag bund was put round the old mouth of the byewash, and the river diverted through the new four vents on the 22nd. Very great trouble is being experienced from insufficient pumping power, the water pouring through the loose stuff of which the bed consists under the gunny-bags. Masonry is being put in with great difficulty in small sections.

3. Earthwork was in progress within the foundation limits on both sides of the valley and also in the turbine channel.

4. Work on the right bank escape was in steady progress and stone supplied from it to the main dam.

5. *Workshop.*—The concrete in the turbine pit was completed; the timber framework placed in position and the turbine itself fitted in place. The timber framing for some of the machinery was prepared.

6. In Thekady sub-division the arrangement of cranes for unloading at dams Nos. 1 and 2 were nearly complete.

7. The foundations for No. 2 lock weir were proceeded with. These are giving much trouble.

8. *Wire Tramway.*—Most of the posts are in position, the terminal at the lime-stone depôt was commenced, the supply channel troughs were in progress.

9. Two elephants have been at work engaged partly on hauling the posts to site and in taking beams to Periyár for the workshop.

10. *Watershed cutting.*—The silt has been nearly all removed, and the drop from the diversion into the cutting nearly completed.

11. *Tunnel.*—Progress during September was 110 feet at the north end. Want of water was felt for some days, but an opportune fall of rain filled up the reservoir again. Work was commenced on raising the reservoir dam. The circular tunnels at south end were continued and will meet shortly.

12. The failure of the monsoon is having its effects on the health. The office establishment and the subordinates particularly are constantly suffering from fever, and matters in this way will grow worse until rain recommences. The serious difficulties caused by repeated absence of members of the establishment from illness are being separately represented.

PERIYAR,
6th October 1890.

(Signed) H. S. TAYLOR,
Executive Engineer, No. I Periyár Division.

9th October 1890.

(Signed) D. McN. CAMPBELL, Major, R.E.,
Superintending Engineer, Periyár Project.

REPORT of progress of Works in No. II Periyár Division for September 1890.

The earthwork in the first reach has made good progress, and I hope will be soon completed, with the exception of the part where the channel passes through the two tanks.

2. Masonry not progressing very well except Ramarajapuram surplus sluice.

3. *Second Reach.*—Small quantities of earthwork yet to be done. First cross drainage work (culvert) completed and the fourth will be by the end of the month; the second and third works are making fair progress.

4. *Third Reach.*—All the masonry works are being pushed on vigorously and the whole reach masonry and earthwork should be completed in this official year.

5. *Fourth Reach*—Has the surface water so high that work is seriously impeded.

6. *Of the Branch channels*—Nos. 1 and 2 are almost entirely complete. No. 3, most of the earthwork; but the land required for the fourth has not been given over.

7. A little work has been done to the fifth reach, but the Marungaliar cross drainage work has been stopped till a more powerful pump is available.

8. The work done has been satisfactory owing to the fineness of the weather during most of the month, and nearly all of our masonry is so far advanced as to be now independent of the weather.

9. The health throughout has been good.

11th October 1890.

(Signed) G. P. CARLESS,
Executive Engineer, No. II Periyár Division.

No. 1780 P.R.

Submitted to the Chief Engineer, Public Works Department, in continuation of this office No. 1756 P.R., dated 9th instant.

13th October 1890.

(Signed) D. McN. CAMPBELL, Major, R.E.,
Superintending Engineer, Periyár Project.

Note by the Chief Engineer, Public Works Department.

Submitted for the information of Government.

2. The progress is satisfactory on the whole, but much delay appears to have been caused by want of sufficient pumping power; sanction has been given to the purchase of two boilers to enable the pulsometers to be worked independently of the centrifugal pump, as the boiler of the engine which works the latter has not sufficient steaming power to supply the pulsometers as well.

3. The prevalence of fever is an invariable accompaniment of scanty rainfall in the Periyár valley.

(Signed) J. PENNYCUICK, Colonel, R.E.,
Chief Engineer, P.W.D.

15th October 1890.

ORDER—dated 23rd October 1890, No. 601 I., Public Works.

Recorded.

2. The report will be forwarded to the Government of India in continuation of endorsement No. 547 I., dated 29th September 1890.

(Here enter No. 602 I., dated 23rd October 1890.)

(True Extract.)

(Signed) J. PENNYCUICK, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation.
„ Superintending Engineer, Periyár Project.
„ Revenue Department.

ENDORSEMENT—dated 23rd October 1890, No. 602 I., Public Works.

Forwarded.

(By Order.)

(Signed) J. PENNYCUICK, Colonel, R.E.,
Secretary to Govt., P.W.D.

IRRIGATION.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated October, 23rd.

Recd. *Encl.*

G.O., 23rd Oct. 1890, Nos. 601 I., 602 I.

OCTOBER.

Periyar Works.

Forwarding the progress reports of works in No. I and II Periyár Divisions for September 1890.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper :—

From Lieut.-Colonel R. R. E. DRAKE-BROCKMAN, R.E., Superintending Engineer, IV Circle, to the Chief Engineer for Irrigation, dated Gobichettipoliem, 2nd October 1890, No. 96-E.I.

I have the honor to forward, for sanction of Government, a second revised estimate, amounting to Rs. 5,710, or Rs. 816 more than the first revised estimate sanctioned in G.O., No. 572 I. of 20th November 1889, for cutting new head to Agaram channel of Barur Tank Project.

2. The necessity for this revision is due (1) to insufficient rate allowed for blasting rock in the channel. At the time of revising the original estimate the difficulty of removing rock in a narrow channel escaped notice; and (2) to the constant silting of the channel by freshes down the river has also caused some increase in the work to be done.

3. The excess can be met from savings shown against item No. 19 constructing inlets—*vide* statement printed with G.O., No. 418 I. of 2nd August 1890.

ORDER—dated 23rd October 1890, No. 604 I., Public Works.

The following revised estimate, amounting to Rs. 5,710, for cutting new head to Agaram channel, Barur Tank Project, is sanctioned in supersession of the estimate of Rs. 4,894 sanctioned for the work in G.O., No. 572 I., dated 20th November 1889, the excess of Rs. 816 being met by reducing to that extent the existing sanctioned provision of Rs. 2,024 for "constructing 23 inlets to Keelcooppam channel" :—

Capital Expenditure not charged to Revenue.
49. Irrigation.
Barur Tank Project.
I. Works.
(2) Main Canals and Branches.
L. Earthwork.

	RS.
Cutting new head to Agaram channel, estimate	5,710

2. This sanction has been registered as No. 76 I. of 1890-91.

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, IV Circle, with three enclosures.
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated October, 23rd.

Recd. *Encl.*

G.O., 23rd Oct. 1890, No. 604 I.

OCTOBER.

Barur Tank Project

Revised estimate of Rs. 5,710 for cutting new head to Agaram channel of —, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following papers :—

From J. HANNAN, Esq., Superintending Engineer, II Circle, to the Chief Engineer for Irrigation (through the Examiner of Public Works Accounts), dated Bezváda, 22nd May 1890, No. 52 B.C.

I have the honor to forward herewith a completion report for the work—constructing a flood-gate in the north bank of the Pennér river.

2. The excess over the sanctioned estimate is Rs. 2,609-4-10, which I request may be sanctioned.

3. I will now state the causes of the principal savings and excesses :—

Item 1, *Jarrah wood for grills.*—No grills were used, hence the saving of Rs. 1,260. The division officer does not give the authority for dispensing with the grills ; he has been written to do so.

Item 2, *Surki concrete in foundation.*—There is a saving of Rs. 343-1-9, due to work being done for less than the estimate rate ; 8 inches to 10 inches greater depth was allowed in foundations, which accounts for the extra quantity done.

Item 3, *Cement concrete.*—The excess quantity is due to cement concrete work having been substituted for cement blocks (item 4), and the excess in rate is due to a greater proportion of cement having been used than was originally intended under the orders of the then division officer Mr. Vincent.

Item 5, *Cut granite stones.*—The excess rate is said to be due to the stones having been brought from Madras, as it was found it would expedite work to so bring them instead of the place where it was originally intended to obtain them. This place is not specified. It is also due to the stones having to be re dressed when brought to work spot. The explanation is not quite satisfactory.

Item 6, *Rough stone apron and revetments.*—The excess in quantity is due to some extra necessary work having to be done. The excess in rate is due to the stone having to be obtained from a more distant quarry, the quarry from which it was intended to obtain the stone being inaccessible during the rains.

Item 8, *Gates complete.*—The excess is said to be due to an alteration in the design for which no authority is given, which substituted for one shutter in each gate leaf three shutters in the two leaves and to the work having been done by Messrs. Massey & Co. No further explanation is given, and the explanation given is not satisfactory. The excess is Rs. 754-11-5.

Items 9 & 10, *Earthwork and baling.*—The explanation given is that the lump sum provisions made in the estimate were insufficient.

The savings and excesses on the other items are small and call for no remarks.

4. The completion report for this work was forwarded to me by Mr. Larminie on 20th November last ; the delay in its submission is due to my having to wait until now for proper explanations for the savings and excesses noted above.

No. 3610.

Forwarded.

2. The estimate and outlay have been checked and found correct.

MADRAS,
20th June 1890.

(Signed) C. H. P. CHRISTIE, Major, R.E.,
Examiner, Public Works Accounts.

Memo. from the Chief Engineer for Irrigation, to the Superintending Engineer, II Circle, dated 1st July 1890, No. II/24 B.C.

Excess on cost of "flood-gate, north bank of Pennér," Buckingham Canal.

With reference to letter No. 52 B.C., dated 22nd May 1890, from Superintending Engineer, II Circle, and its enclosure, the undersigned has the honor to remark—

(*a*) Information as to the authority for dispensing with the grills is awaited.

(*b*) The work done by Messrs. Massey and Co. was, it is supposed, on a detail or lump sum contract, and it should be reported what was the total amount of such contract * compared with the estimated amount; who made the contract; and whether, in making it, the Code rules on the subject, 1350 to 1362, were adhered to, or, if departed from, who is responsible for such departure.

* It is supposed that the payment to that firm was the same as the amount of the contract.

2. The excesses over estimates of works on the Buckingham Canal are frequent, and it is evident that the matter requires careful consideration and dealing with by the Superintending Engineer.

From J. HANNAN, Esq., Superintending Engineer, II Circle, to the Chief Engineer for Irrigation, dated Bezváda, 26th September 1890, No. 168 B.C.

With reference to your memorandum No. II/24 B.C. of 1st July 1890, I have the honor to return the completion report for the Pennér north flood-gate and to report as follows.

2. There is nothing on record to show why the grills were dispensed with by Mr. Vincent, but it is presumed that they were dispensed with by him as the soil in the foundations was sufficiently hard.

3. The flood-gates were given on piece-work to Messrs. Massey & Co at a rate of Rs. 6-8-0 per cubic foot. This rate included iron fittings, such as straps and bolts and iron tie rods, but did not include lifting gear, anchor irons or pintles or collar straps. These were all supplied to order without any rate being fixed unless perhaps verbally by Mr. Vincent.

4. Messrs. Massey & Co.'s bill is herewith submitted for your information.

No. 151 I.

Note by the Chief Engineer for Irrigation.

The deviations from the sanctioned plan and estimate and the giving of the work for the gates on contract seem to have been carried out in a most unsystematic manner by the Executive Engineer Mr. Vincent; the provisions of paras. 294 and 296 and of para. 1350 of the Public Works Code appear to have been disregarded, and the Superintending Engineer seems to have known little or nothing of what was going on, for he says there is "*nothing on record to show*" why an important change in the design was made and that "*it is presumed*" it was made by the Executive Engineer. The work is an important one, and even if the Executive Engineer failed to send in the proper deviation statements, visits to the work, inspection of accounts, and progress reports ought to have drawn the Superintending Engineer's attention to the changes which were being made without proper authority.

2. The excess outlay may in this case be admitted, but the Superintending Engineer should in future see that para. 953 of the Code is attended to, and "a revised estimate submitted when the sanctioned estimate is likely to be exceeded."

CHEPÂK,
15th October 1890.

(Signed) G. T. WALCH,
Chief Engineer for Irrigation.

To the Joint Secretary to Government,
Public Works Department, Irrigation Branch.

ORDER—dated 24th October 1890, No. 605 I., Public Works.

The Examiner of Public Works Accounts is authorized to admit the outlay incurred in constructing the flood-gate in the north bank of the Pennér river, the excess expenditure of Rs. 2,609 being met from the balance of the amount reserved for unforeseen works of the Buckingham Canal, which will then be reduced to Rs.90,936.

2. This sanction has been registered as No. 77 I. of 1890-91.

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, II Circle.
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated October, 24th.

Recd. *Encl.*

G.O., 24th Oct. 1890, No. 605 I.

OCTOBER.

Flood-gate in the North Bank of the Penner River

Authorizing the Examiner, Public Works Accounts, to admit the outlay incurred in constructing the —.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper :—

Office note from the Examiner, Public Works Accounts, dated Madras, 24th September 1890, No. 5718.

With reference to G.O., No. 3174 W. of 2nd December 1886, I beg to forward herewith a report on the working of the Dowlaishweram Workshops during the official year 1889-90.

ENCLOSURE.

REPORT on the working of the Dowlaishweram Workshops during the official year 1889-90, prepared in accordance with G.O., No. 3174 W., dated 2nd December 1886.

Statement A, showing the direct receipts and charges of the shops during the year, is not submitted as the shops have been made a sub-division of Godávari Eastern division with effect from 1st January 1890 (G.O., No. 2671 W., dated 24th September 1889) and transactions in connection with the following heads which were heretofore shown in statement A have become merged in the accounts of Godávari Eastern division :—

Receipt and Charge sides.

Cash balance.
Transfers, Divisional.
Deposits (ordinary).

Receipt side.	*Charge side.*
	Payments into treasury.
Cheques of Public Works officers.	Expenditure against suspense heads—
Provincial Revenue receipts.	Stock purchases and sales.
Income tax.	Stock.
	Miscellaneous advances.

2. The revenue or profit and loss account of the shops is shown in the following statement :—

B.—Revenue or Profit and Loss Account of the Dowlaishweram Workshops during the year 1889-90.

RECEIPTS.	RS. A. P.	Amount. RS. A. P.
Provincial.		
(*a*) Revenue—Profits ..	2,013 10 2	
(*b*) Miscellaneous ..	59 10 6	2,073 4 8
Irrigation.		
(*c*) Revenue—Profits including centages ..	4,178 6 2	
Rents from quarters the returns from which are not expected to yield interest on cost of construction..	212 0 6	
Sales of old materials..	0 10 10	
Miscellaneous ..	4 2 7	4,395 4 1
(*d*) Loss	..	11,331 4 2
Total ..		17,799 12 11

CHARGES.	RS. A. P.	Amount. RS. A. P.
DIRECT CHARGES.		
Working Expenses.		
Maintenance and repairs	..	415 15 6
(*e*) Establishment ..	..	9,298 2 4
Tools and Plant—Repairs and carriage.	..	1,033 3 8
		10,747 5 6
INDIRECT CHARGES.		
Depreciation block at 3 per cent. on Rs. 26,220-12-7 ..	786 10 0	
Machinery and plant at 4 per cent. on Rs. 28,284-11-2 ..	1,131 6 2	1,918 0 2
Leave and pension allowances at $14\frac{2}{7}$ per cent. on Rs. 9,298-2-4.	..	1,328 4 9
Interest on capital at 4 per cent. on Rs. 95,153-15-6 ..	..	3,806 2 6
Tota ..		17,799 12 11

3. The following remarks and explanations are offered with reference to certain items in the statement :—

(a) *Revenue Provincial profits, Rs.* 2,013-10-2.—This is due to result of stock-taking, stock having been found surplus to this extent and credited to Revenue—*vide* this office office-note No. 1764, dated 9th December 1889.

(b) *Revenue Provincial miscellaneous, Rs.* 59-10-6.—This represents the sale-proceeds of old materials and miscellaneous items.

(c) *Irrigation Revenue profits including centages, Rs.* 4,178-6-2.—This represents the net amount realized on account of profits and centages after deducting Rs. 905-4-9, the loss sustained by the shops on jobs undertaken.

(d) *Loss, Rs.* 11,331-4-2.—If indirect charges on account of leave and pension allowances and interest on capital account, amounting to Rs. 5,134-7-3, are omitted, the loss on the operations of the year would be only Rs. 6,196-12-11.

(e) *Establishment, Rs.* 9,298-2-4.—The outlay on establishment during 1888-89 was Rs. 10,510-11-11, and the short outlay, during the year, of Rs. 1,212-9-7 is due to the transfer of the following persons from the Workshop establishment as per G.O., No. 2671 W., dated 24th September 1889 :—

Conductor E. W. Bennett, Supervisor, 1st grade.
S. Sankara Row, Accountant, 5th grade.
R. Visvanatha Row, Clerk, IV class, 3rd grade.

4. The balance sheet on Capital account as it stood on 31st March 1890 is as follows :—

C.—Capital Balance Sheet of the Dowlaishweram Workshops as it stood on 31st March 1890.

RECEIPTS.	Amount.	*CHARGES.*		Amount.
CAPITAL AND LIABILITIES.	RS. A. P.	PROPERTY AND ASSETS.	RS. A. P.	RS. A. P.
Capital.		*Block.*		
Capital of the Shops	53,588 0 11	Balance on 1st April 1889 ..	29,584 14 3	
		Additions during the year .. +	3,364 1 8	
Debts.		Depreciation at 3 per cent. .. —	786 10 0	
				25,434 2 7
		Machinery and Plant.		
Value of labor employed on Workshops jobs not paid for ..	837 14 9	Balance on 1st April 1889 ..	29,034 11 6	
		Additions during the year ..	1,019 8 10	
		Depreciation at 4 per cent. .. —	1,131 6 2	
				28,922 14 2
		Suspense Account.		
		Workshop manufacture suspense		68 14 11
Total ..	54,425 15 8	Total ..		54,425 15 8

5. The account shows that the capital of the shops at the end of the year stood at Rs. 53,588-0-11, being less than the figure at commencement of the year by Rs. 41,565-14-7 as detailed below :—

—	Opening balance on 1st April 1889.	Closing balance on 31st March 1890.	Increase.	Decrease.
	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.
(a) Block	29,584 14 3	25,434 2 7	..	4,150 11 8
(b) Machinery and plant	29,034 11 6	28,922 14 2	..	111 13 4
(c) Workshop manufacture suspense	610 8 5	68 14 11	..	541 9 6
(d) Stock purchases and sales	— 609 3 2	..	609 3 2	..
(e) Stock	36,764 13 11	..	..	36,764 13 11
(f) Miscellaneous advances	418 4 0	..	..	418 4 0
(g) Cash balance	720 3 6	..	..	720 3 6
Total ..	96,524 4 5	54,425 15 8	609 3 2	42,707 7 11
Deduct.				
(h) Arrears due to Workshop manufacture suspense	1,309 10 11	837 14 9	..	471 12 2
(i) Deposits	60 10 0	..	..	60 10 0
	95,153 15 6	53,588 0 11	609 3 2	42,175 1 9
(j) Decrease of capital	..	41,565 14 7	..	41,565 14 7
Total ..	95,153 15 6	95,153 15 6	..	..

6. The following remarks and explanations are offered with reference to the above :—

(a) *Block.*—This shows the value of the buildings both at commencement and end of the year. The decrease of Rs. 4,150-11-8 is thus made up : Rs. 3,364-1-8 due to the transfer with value of the dry-dock and Deputy Superintendent's quarters to Godávari Eastern division as

per clause 5 of note from the Chief Engineer for Irrigation embodied in G.O., No. 2671 W., dated 24th September 1889, and Rs. 786-10-0 to the usual allowance for depreciation.

(*j*) *Decrease of Capital, Rs.* 41,565-14-7.—The large decrease under this head is due to the abolition of the shops as a separate division and the consequent merging of the balances under the following heads with the balances of Godávari Eastern division:—

Stock purchases and sales.	Cash balance.
Stock.	Deposits, ordinary.
Miscellaneous advances.	

7. The outturn of the shops during the year under report amounts to Rs. 62,591-1-9 against Rs. 73,115-0-8 during 1888-89 and the particulars are as given below:—

	RS.	A.	P.
I. Works done for Public Works Department—			
(*a*) Delta works	43,642	2	9
(*b*) Other Public Works Department works	12,870	6	9
	56,512	9	6
II. Works for other Departments	4,937	12	6
III. Works for private parties	1,140	11	9

8. The large decrease in outturn, viz., Rs. 10,523-14-11, during the year is mainly due to short outturn under other Public Works Department works. The outturn under this head for the year is Rs. 12,870-6-9 against Rs. 23,312-9-6 in 1888-89.

(Signed) F. MORRISON,
Offg. Examiner, Public Works Accounts, Madras.

ORDER—dated 27th October 1890, No. 611. I., Public Works.

The loss for the year on the working of the Dowlaishweram Workshops, as shown in the statements above given, was Rs. 11,331 or rather more than 25 per cent. on the value of the work done for the Godávari delta which amounted to Rs. 43,642 and was charged for at only absolute cost price.

2. The reductions in establishment ordered in G.O., No. 2671 W., dated 24th September 1889, came into force only in January last, and therefore only slightly affected the expenses of the year under notice; they will have considerable effect in the current year.

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
,, Superintending Engineer, I Circle.
,, Examiner, Public Works Accounts.

IRRIGATION.
ACCOUNT.

Govt. of {1890} Madras

PUBLIC WORKS.

Dated October, 27th.

Recd. *Encl.*

G.O., 27th Oct. 1890, No. 611 I.

OCTOBER.

Dowlaishweram Workshops.

Passing orders on report on the working of the — during the year 1889-90.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper :—

No. 153 I.

Note by the Chief Engineer for Irrigation.

The amount of direct charges fixed in the Proceedings of the Madras Government noted in the margin for old maintenance charges of works for which Capital and Revenue Accounts are kept is Rupees 3,64,169 as shown below :—

No. 395 I. of 18th July 1890.
„ 484 I. of 4th September 1890.

	Original works.	Repairs.	Establishment.	Tools and plant.	Total.
	RS.	RS.	RS.	RS.	RS.
Godávari delta	..	..	7,450	..	7,450
Kistna delta	..	..	4,260	..	4,260
Pennér anicut	3,564	13,860	11,027	5	28,456
Sangam do.	345	11,884	11,153	57	23,439
Cauvery delta	..	1,05,634	1,66,196	1,603	2,73,433
Srívaikuntham anicut	352	5,208	6,019	78	11,657
Barur tank	..	..	120	..	120
Chembrambakam tank	2,283	3,097	1,238	109	6,727
Pálár anicut	178	2,909	710	4	3,801
Pelandorai anicut	59	58	27	2	146
Madras Water-supply and Irrigation Extension Project	3,600	200	870	10	4,680
Total ..	10,381	1,42,850	2,09,070	1,868	3,64,169

2. The amount provided for these old maintenance charges in the current year's budget estimate for 43. Minor Works and Navigation is only Rs. 3,64,000.* The difference of Rs. 169 may be appropriated from the reserve under Irrigation and Navigation Works for which neither Capital nor Revenue Accounts are kept " Ordinary works " as shown below :—

	RS.
* Original works	10,384
Repairs	1,42,856
Establishment	2,08,461
Tools and plant	2,299
Total ...	3,64,000

	RS.
Minor original works	136
Establishment	31
Tools and plant	2
Total ...	169

The distribution by departmental heads of the total amount of Rs. 3,64,169 as shown in the statement in para. 1 above should be adopted.

CHEPÂK,
18th October 1890.

(Signed) H. E. CLERK,
for Chief Engineer for Irrigation.

To the Joint Secretary to Government,
Public Works Department, Irrigation Branch.

ORDER—dated 27th October 1890, No 612 I., Public Works.

The appropriation proposed by the Chief Engineer for Irrigation is sanctioned.

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
,, Superintending Engineer, I Circle.
,, ,, ,, II ,,
,, ,, ,, IV ,,
,, ,, ,, V ,,
,, ,, ,, VI ,,
,, Examiner, Public Works Accounts.
,, Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated October, 27th.

Recd. *Encl.*

G.O., 27th Oct. 1890, No. 612 I.

OCTOBER.

Old Maintenance Charges of Works for which Capital and Revenue Accounts are kept

The appropriation proposed by the Chief Engineer for Irrigation to meet the difference of Rs. 169 between the fixed — and the amount provided for such charges in the current year's budget, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.

READ—the following paper:—

No. 152 I.

NOTES of Inspection, Kurnool-Cuddapah Canal, portions from Head at Sunkesala to Nandyál and from the Pennér to Cuddapah.

Sunkesala Anicut.—The water being just below crest of the anicut, I was able to walk over its whole length and see it well; it is in good order. Much was done during last dry season in filling in with rubble and concrete the holes in the rock which have formed or become enlarged near the work; in the coming season similar work should be done wherever necessary and should be begun in January.

The demarcation of the land on the island between the two branches of the anicut and on the north side of the river handed over to the Madras Irrigation and Canal Company according to land plans and schedules—see Proceedings of the Madras Government, No. 499 I., dated 10th September 1890—has been carried out.

2. *Head-sluices.*—All the vents have now been fitted with screw-gearing.

3. *Canal between Head and Kurnool.*—The tanks along this portion of the canal are now almost entirely silted up; the bullrushes are in parts encroaching too much on the waterway. Banks and works generally in good order.

4. *The Regulator at Kurnool*—has during the last season been fitted up with shutters and screw-gearing which is a great improvement on the former arrangement; but had the plan been submitted before the work was taken in hand, alterations would have been made which would have caused an appreciable diminution of cost. The fitting has not been done as well as it should have been; there are beams without holding-down plates, holding-down bolts the nuts of which do not touch the plates they are intended to hold down, and grooves not wide enough to take the full thickness of the shutters, &c.; all should be put right during next closure.

5. *The Swing Bridge*—in front of the lock, an unnecessarily heavy and not well designed work, may be made to work more easily by providing balance or lever beams at its tail fixing the truck on which the wheels run true, and so on.

6. *The Hindry Aqueduct*—is in good order except that some banian roots have established themselves in the upstream face; they must be thoroughly eradicated.

7. *From Kurnool to Nandyál the Canal and its works*—generally are in very fair order and bear every appearance of being well looked after, but there are but very slight evidences of any increase of irrigation. All down the vallies of the Kálee and the Kundár there is no large area of waste land, and the "dry" crops are looking in first-rate order.

8. The Executive Engineer in charge of the canal is still left without the information from the Revenue authorities necessary to enable him to know what is being done about irrigation. In para. 10 of my inspection notes printed with Proceedings of the Madras Government, No. 571 I., dated 20th November 1889, I said "the Executive Engineer has no means of knowing what lands have applied for water; this of course needs immediate correction and the Executive Engineer should be kept informed each month by the Revenue authorities of the fields which are entitled to water in each village. Of course each monthly statement need not recapitulate the

information of previous month, but should merely give any additions since the previous month's statement," and I strongly recommend that these statements be arranged for.

9. *Adinamayapalli Anicut across the Pennér.*—Owing to a scour along the face of this work which has disturbed the sand round the wells for a length of 130 feet, there has for that distance been a subsidence of the body wall of from 12 to 18 inches. The first signs, and they were sufficiently alarming ones, became apparent early in May and were then reported by the overseer to the Assistant Engineer in charge of the sub-division who, however, took no notice of the matter and said nothing about it to the Executive Engineer, whom he relieved, to go on privilege leave, a few days after. For the month the Assistant Engineer remained in charge of the division he continued to ignore the matter and did not even mention it when on the 16th June he handed the division back to the Executive Engineer. The injury to the work of course went on increasing all this time, and on 20th June there was a far more serious and extensive settlement than there had been six weeks before; then at last the Assistant Engineer visited the work and set about doing something, though that something was almost inconceivably foolish. Fortunately, however, he did then report the matter to the Executive Engineer who took the proper measures, and with stone, plenty of which was obtainable close at hand, stopped the scour and protected the front of the anicut, and since then there has been no extension of the damage. The Superintending Engineer has sent in an estimate, Rs. 10,500, for entirely rebuilding the portion of the work which has settled, but having taken advantage of a very low state of the river to inspect the anicut I have great hopes of being able to so patch up the existing work as to make it safe and perfectly effective at a small cost, and I issue orders accordingly. The conduct of the Assistant Engineer I deal with separately.

CHEPÂK,
17th October 1890.

(Signed) G. T. WALCH,
Chief Engineer for Irrigation.

To the Joint Secretary to Government,
Public Works Department, Irrigation Branch.

ORDER—dated 28th October 1890, No. 613 I., Public Works.

Communicated to the Superintending Engineer, III Circle, for information and guidance.

2. Orders will issue in the Revenue Department for the regular submission by Tahsildars to the Executive Engineer, Kurnool-Cuddapah Canal, of statements such as recommended by the Chief Engineer for Irrigation in para. 8 of his inspection notes.

3. The neglect of duty on the part of Assistant Engineer, Kurnool Division, is separately dealt with.

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
„ Superintending Engineer, III Circle.
„ Examiner, Public Works Accounts.
„ Revenue Department.

IRRIGATION.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated October, 28th.

Recd. *Encl.*

G.O., 28th Oct. 1890, No. 613 I.

OCTOBER.

Notes of Inspection

Communicating to the Superintending Engineer, III Circle, with remarks, the — of the Chief Engineer for Irrigation on the Kurnool-Cuddapah canal, portions from head at Sunkesala to Nandyál and from the Pennér to Cuddapah.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper:—

No. 154 I.

Note by the Chief Engineer for Irrigation.

The Superintending Engineer, II Circle, has, in his supplemental application for modification of allotments, dated 22nd September 1890, stated that Rs. 100 are required for repairing wagons, &c., for the Sangam anicut system under 42. Major Works (Working Expenses) Tools and Plant. As the sum of Rs. 57 for tools and plant included in the amount of old maintenance charges fixed for the Sangam anicut system in G.O., No. 484 I., dated 4th September 1890, will be provided under 43. Minor Works and Navigation and will be available for expenditure, the amount still required will be only Rs. 43. This small sum may be provided by transfer of Rs. 35 from the grant for maintenance and repairs and Rs. 8 from that for establishment.

CHEPÂK,
18th October 1890.

(Signed) H. E. CLERK,
for Chief Engineer for Irrigation.

To the Joint Secretary to Government,
Public Works Department, Irrigation Branch.

ORDER—dated 28th October 1890, No. 614 I., Public Works.

The following transfer of funds is sanctioned:—

Imperial.
42. Major Works (Working Expenses).
Sangam Anicut System.

From	RS.	*To*	RS.
Maintenance and repairs	35	Tools and plant	43
Establishment	8		
Total ...	43	Total ...	43

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, II Circle.
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated October, 28th.

Recd. *Encl.*

G.O., 28th Oct. 1890, No. 614 I.

OCTOBER.

Funds

Sanctioning certain transfer of —.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper :—

From G. D. WYBROW, Esq., Superintending Engineer, I Circle, to the Chief Engineer for Irrigation, dated Dowlaishweram, 15th October 1890, No. 1387 G.D.

With reference to para. 2 of G.O. No. 467 I., dated the 29th August 1890, I have the honor to inform you that Rs. 14,000 required under Extensions and Improvements for the Godávari Western division can be transferred from the existing grant, Rs. 1,60,000, under Maintenance and Repairs of that division, and beg to request that you will be so good as to obtain the sanction of Government to the above transfer of funds.

ORDER—dated 29th October 1890, No. 618 I., Public Works.

The following transfer of funds is sanctioned :—

Imperial.
42. Major Works (Working Expenses).
Godávari Delta System.
Western Division.

From	RS.	*To*	RS.
Maintenance and Repairs	14,000	Extensions and Improvements.	
		Excavating Anataram Channel ...	4,800
		Minor Works	9,200
Total ...	14,000	Total ...	14,000

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, I Circle.
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated October, 29th.

Recd. *Encl.*

G.O., 29th Oct. 1890, No. 618 I.

OCTOBER.

Transfer of Funds

Sanctioning certain —.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

TABULAR STATEMENT OF MISCELLANEOUS PROCEEDINGS AND MATTERS OF ROUTINE.

IRRIGATION,

FOR THE MONTH OF OCTOBER 1890.

Subjects.	Number and Date of Order.	Numbers and Dates of previous Orders.
Budget estimates under 43. Irrigation and Navigation for 1891-92.—Memorandum from the Financial Department directing to prepare the — on the basis of a grant of Rs. 36,50,000, communicated to the Chief Engineer for Irrigation.	1st Oct. 1890, No. 553 I.	......
Photos of the Periyár Project.—Letter from the Superintending Engineer, Periyár project, forwarding — with a note thereon by the Chief Engineer, Public Works Department, recorded.	6th do. do. No. 555 I.	......
Water-supply for the town of Coimbatore.—Proceedings, Local and Municipal Department, recording office note from this Department, regarding the —, recorded.	7th do. do. No. 556 I.	12th Aug. 1890, No. 648 D.
Statement of objectionable items.—Orders on Provincial —, Periyár project, for period ending 30th June 1890.	7th do. do. No. 565 I.	4th Sept. 1890, No. 486 I. 23rd May 1890, No. 303 I. 24th June 1890, No. 345 I.
Statement of objectionable items.—Orders on Provincial —, I Circle, for period ending 30th June 1890.	7th do. do. No. 566 I.	27th Aug. 1890, No. 465 I. 24th June 1890, No. 346 I. 1st March 1890, No. 129 I.
Statement of objectionable items.—Orders on Provincial —, III Circle, for period ending 30th June 1890.	9th do. do. No. 567 I.	24th June 1890, No. 348 I. 21st May 1890, No. 291 I.
Irrigation Revenue Reports of the Punjab.—Letter from the Secretary to the Government of the Punjab stating that the — for 1887-88 and for 1888-89 have been forwarded; and that for 1889-90 is under preparation; and that future reports will be forwarded to the Irrigation Branch of the Madras Secretariat, recorded.	9th do. do. No. 570 I.	19th Aug. 1890, No. 649 D.

Subjects.	Number and Date of Order.	Numbers and Dates of previous Orders.
Statement of objectionable items.—Orders on Provincial —, VI Circle, for period ending 30th June 1890.	11th Oct. 1890, No. 576 I.	......
Suit.—Sanctioning to appeal in the — brought by a contractor for the Chittandi repairs.	11th do. do. No. 576-A I.	......
Administration Report of Irrigation Works in Bengal for 1889-90.—Copy of the —, recorded.	16th do. do. No. 585 I.	......
General Mullins' Irrigation Manual.—Letter from the Secretary to Government. North-Western Provinces, acknowledging receipt of three additional copies of —, recorded.	23rd do. do. No. 603 I.	23rd Sept. 1890 Nos. 534-35 I.
Lands required for the Periyár Project.— Letter from the Collector of Madura requesting early publication of the draft notification for the acquisition of —, recorded with reference to G.O., Nos. 577-78 I., dated 14th October 1890.	24th do. do. No. 606 I.	......
Progress reports of works in Nos. 1 *and* 2, *Periyár division.*—Ordered that the —, for August and September 1890, be forwarded to the Government of India.	24th do. do. No. 607 I.	......
Forwarded	24th do. do. No. 608 I.	......
Irrigation Administration Report for 1889-90, *Bombay.*—Letter from the Government of Bombay requesting to make certain corrections in the —, recorded.	27th do. do. No. 609 I.	5th Sept. 1890, No. 494 I.
Erratum in G.O., No. 551 I., dated 29th September 1890.	27th do do. No. 610 I.	......
Minor Irrigation Works.—Proceedings, Revenue Department, recording Board's Proceedings reviewing the progress reports of —, up to the end of July 1890, recorded.	28th do. do. No. 615 I.	......
Palayam channel.—Complaint of certain landholders of Puthevari village, Tinnevelly district, regarding the closing of the — and the report of the Superintending Engineer, VI Circle, thereon, recorded.	28th do. do. No. 616 I.	......
Támbraparni flood banks below Srivaikunthum anicut.—Orders on petition from certain ryots of Umarikadu village, Tinnevelly district, complaining about the land taken up in their village for the —.	29th do. do. No. 617 I.	5th March 1889, No 119 I. 19th Oct. 1889, No. 509 I.